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DEPARTMENT OF AGRICULTURE

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Pennsylvania State Board of Agriculture

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VIRTUE
LIBERTY AND
INDEPENDENCE

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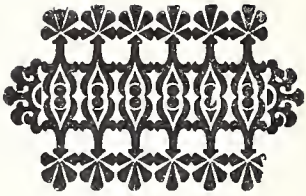

MEMBERS

OF THE

Pennsylvania State Board of Agriculture

FOR THE YEAR 1916

MEMBERS EX-OFFICIO

HON. MARTIN G. BRUMBAUGH, Governor.
HON. HENRY HOUCK, Secretary of Internal Affairs.
DR. N. C. SCHAEFFER, Superintendent of Public Instruction
DR. EDWIN ERLE SPARKS, President of the State College.
HON. A. W. POWELL, Auditor General.
HON. CHARLES E. PATTON, Secretary of Agriculture.

APPOINTED BY THE GOVERNOR

Mrs. Jean Kane Foulke, West Chester, Chester County, ...Term expires 1917

APPOINTED BY THE PENNSYLVANIA STATE POULTRY SOCIETY

W. Theo. Wittman, ...Allentown,.....1917

APPOINTED BY THE PENNSYLVANIA BEE-KEEPERS' ASSOCIATION

E. A. Weimer, ...Lebanon, ...1918

ELECTED BY COUNTY AGRICULTURAL SOCIETIES.

			Term expires.
Adams,	A. I. Weidner,	Arendtsville,	1918
Allegheny,	C. L. Hood,	Coraopolis, R. D.,	1918
Armstrong,	S. S. Blyholder,	Kelly Station,	1917
Beaver,	Walter C. Dunlap,	West Bridgewater,	1917
Bedford,	Wm. F. Biddle,	Everett,	1918
Berks,	H. G. McGowan,	Geiger's Mills,	1919
Blair,	W. Frank Beck,	Altoona,	1917
Bradford,	Louis Piollet,	Wysox,	1919
Bucks,	B. Frank Wambold,	Sellersville,	1917
Butler,	Wm. H. Milliron,	Marwood,	1917
Cambria,	L. J. Bearer,	Hastings,	1919
Cameron,			
Carbon,	Edward Lienhard,	Mauch Chunk,	1917
Centre,	John A. Woodward,	Howard,	1918

			Terms expires.
Chester,	M. E. Conard,	Westgrove,	1918
Clarion,	J. H. Wilson,	Clarion,	1919
Clearfield,	T. L. Way,	Curwensville,	1919
Clinton,	Joel A. Herr,	Millhall,	1917
Columbia,	A. C. Creasy,	Bloomsburg, R. D.,	1919
Crawford,	W. F. Throop,	Espyville,	1918
Cumberland,			
Dauphin,	E. S. Keiper,	Middletown,	1917
Delaware,	Thos. H. Wittkorn,	Media,	1917
Elk,	John G. Schmidt,	St. Marys,	1919
Erie,	D. Warren De Rosay,	Corry,	1919
Fayette,	John T. Smith,	Dunbar,	1919
Forest,			
Franklin,	J. P. Young,	Marion,	1917
Fulton,	Frank Ranck,	Hancock, Md.,	1919
Greene,			
Huntingdon,	George G. Hutchison,	Warrior's Mark,	1918
Indiana,	S. C. George,	West Lebanon,	1919
Jefferson,	Peter B. Cowan,	Brookville,	1919
Juniata,	Matthew Rodgers,	Mexico,	1918
Lackawanna,	Horace Seamans,	Factoryville,	1919
Lancaster,	J. Aldus Herr,	Lancaster,	1917
Lawrence,	Doris L. Fulkman,	New Wilmington,	1919
Lebanon,	Edward Shuey,	Annville, R. D. 2,	1919
Lehigh,	P. S. Fenstermacher,	Allentown,	1918
Luzerne,	J. E. Hildebrant,	Dallas,	1918
Lycoming,	B. F. Kahler,	Hughesville,	1918
McKean,	E. A. Studholme,	Smethport,	1919
Mercer,	W. C. Black,	Mercer,	1917
Mifflin,	C. M. Smith,	Lewistown,	1919
Monroe,	F. S. Brong,	Saylorsburg,	1919
Montgomery,	John H. Schultz,	Norristown,	1917
Montour,	J. Miles Derr,	Milton, R. D.,	1919
Northampton,	C. S. Messinger,	Tatamy,	1918
Northumberland,	Wm. A. Fisher,	Milton,	1919
Perry,	Clark M. Bower,	Blain,	1919
Philadelphia,	David Rust,	Philadelphia,	1919
Pike,	B. F. Killam,	Paupack,	1918
Potter,			
Schuylkill,	John Shoener,	Orwigsburg,	1919
Snyder,			
Somerset,	Robert W. Lohr,	Boswell,	1917
Sullivan,	G. Eugene Bown,	Forksville,	1918
Susquehanna,	Dr. E. E. Tower,	Hallstead,	1919
Tioga,	C. H. DeWitt,	Mansfield,	1917
Union,	J. Newton Glover,	Vicksburg,	1917
Venango,	Homer C. Crawford,	Cooperstown,	1917
Warren,	R. J. Weld,	Sugargrove,	1917
Washington,	Jas. M. Paxton,	Houston,	1917
Wayne,	W. E. Perham,	Varden,	1917
Westmoreland,	W. F. Holtzer,	Greensburg,	1919
Wyoming,	G. A. Benson,	Tunkhannock,	1919
York,	Geo. F. Barnes,	Rossville,	1917

OFFICERS

PRESIDENT

Hon. Martin G. Brumbaugh, ... Harrisburg.

VICE PRESIDENTS

P. S. Fenstermacher, ... Allentown.
S. S. Blyholder, ... Kelly Station.
E. A. Studholme, ... Smethport.

EXECUTIVE COMMITTEE

Matthew Rodgers, Chairman, ... Mexico.
W. F. Biddle, ... Everett.
J. Aldus Herr, ... Lancaster.
B. F. Killam, ... Paupack.
W. F. Throop, ... Espyville.
W. Frank Beck, ... Altoona.
Hon. H. G. McGowan, ... Geiger's Mills.
C. M. Bower, ... Blain.
Charles E. Patton, Secretary, Ex-officio, ... Harrisburg.

ADVISORY COMMITTEE

Joel A. Herr, Chairman, ... Millhall.
B. F. Killam, ... Paupack.
E. E. Tower, V. M. D., ... Hallstead.

LEGISLATIVE COMMITTEE

Hon. H. G. McGowan, Chairman, ... Geiger's Mills
C. H. DeWitt, ... Mansfield.
Hon. Robert W. Lohr, ... Boswell.
Matthew Rodgers, ... Mexico.
George G. Hutchison, ... Warrior's Mark.

COMMITTEE ON RESOLUTIONS

J. Newton Glover, Chairman, ... Vicksburg.
Col. John A. Woodward, ... Howard.
B. Frank Wambold, ... Sellersville.
John Shoener, ... Orwigsburg.
Louis Piolett, ... Wysox.

MEMORIAL COMMITTEE

Joel A. Herr, Chairman, ... Millhall.
C. M. Smith, ... Lewistown.
Col. John A. Woodward, ... Howard.

CONSULTING SPECIALISTS

Botanist,	Prof. F. D. Kern,	State College.
Pomologist,	Chester J. Tyson,	Floradale.
Chemist,	Dr. William Frear,	State College.
Vet. Surgeon,	Dr. C. J. Marshall,	Harrisburg.
Sanitarian,	Dr. S. G. Dixon,	Harrisburg.
Microscopist and Hygienist,	Prof. J. W. Kellogg,	Harrisburg.
Entomologist,	Prof. H. A. Surface,	Harrisburg.
Ornithologist,	Dr. Joseph Kalbfus.	Harrisburg.
Meteorologist,	Prof. W. G. Owens,	Lewisburg.
Apiarist,	H. C. Klinger,	Liverpool.
Economic Geologist,	Prof. Baird Halberstadt,	Pottsville.
Agricultural Geologist,	W. H. Stout,	Pinegrove.
Forests and Forestry,	Irvin C. Williams,	Harrisburg.
Feeding Stuffs,	G. G. Hutchison,	Warrior's Mark.
Soils and Crops,	Prof. Franklin Menges,	York.

STANDING COMMITTEES

CEREALS AND CEREAL CROPS

J. Aldus Herr, ... Lancaster.

ROADS AND ROAD LAWS

Col. John A. Woodward, ... Howard.

FRUIT AND FRUIT CULTURE

A. I. Weidner, ... Arendtsville.

DAIRY AND DAIRY PRODUCTS

R. J. Weld, ... Sugargrove.

FERTILIZERS

F. S. Brong, ... Saylorsburg.

WOOL AND TEXTILE FIBERS

Doris L. Fulkman, ... New Wilmington.

LIVESTOCK

W. C. Black, ... Mercer.

POULTRY

W. Theo. Wittman, ... Allentown.

Proceedings of the Thirty-Ninth Annual Meeting of the State Board of Agriculture, Held in the Caucus Room of the House of Representatives, Capitol Building, Harrisburg, Pa.

Harrisburg, Pa., January 26, 1916, 9 A. M.

Mr. F. D. Kerrick in the Chair.

The CHAIRMAN: Members of the State Board: It is with great pleasure that I look into your happy faces and extend our greetings. We will proceed at once.

MR. HUTCHISON: I nominate Mr. Weld Assistant Secretary of the Board.

The nomination was seconded and Mr. Weld was elected Assistant Secretary.

The CHAIRMAN: First in order is the roll call.

The roll was then called and on this and subsequent calls, the following members responded to their names:

Hon. Martin G. Brumbaugh, Governor; Dr. Edwin Erle Sparks, President of the State College; Hon. Henry Houck, Secretary of Internal Affairs; Hon. Charles E. Patton, Secretary of Agriculture: Mrs. Jean Kane Foulke, West Chester, Chester county; W. Theo Wittman, Penna. State Poultry Society; E. A. Weimer, Penna. Bee-Keepers' Association; A. I. Weidner, Adams county; C. L. Hood, Allegheny county; S. S. Blyholder, Armstrong county; Wm. F. Biddle, Bedford county; W. Frank Beck, Blair county; F. D. Kerrick, Bradford county; B. Frank Wambold, Bucks county; Edward Leinhard, Carbon county; John A. Woodward, Centre county; H. G. McGowan, Berks county; Louis Piollet, Bradford county; L. J. Bearer, Cambria county; M. E. Conard, Chester county; J. H. Wilson, Clarion county; T. L. Way, Clearfield county; Joel A. Herr, Clinton county; A. C. Creasy, Columbia county; W. F. Throop, Crawford county; E. S. Keiper, Dauphin county; Thomas Wittkorn, Delaware county; John G. Schmidt, Elk county; D. Warren DeRosay, Erie county; John T. Smith, Fayette county; Frank Ranck, Fulton county; Geo. G. Hutchison, Huntingdon county; S. C. George, Indiana county; Peter B. Cowan, Jefferson county; Matthew Rodgers, Juniata county; Horace Seamans, Lackawanna county; J. Aldus Herr, Lancaster county; Doris L. Fulkman, Lawrence county; Edward Shuey, Lebanon county; P. S. Fenstermacher, Lehigh county; J. C. Hildebrant, Luzerne county; B. F. Kahler, Lycoming county; E. A. Studholme, McKean county; W. C. Black, Mercer county; C. M. Smith, Mifflin county; F. S. Brong, Monroe county; John H. Schultz, Montgomery county; J. Miles Derr, Montour county; C. S. Messinger, Northampton county; Wm. A. Fisher, Northumberland county; Clark M. Bower, Perry county; B. F. Killam, Pike county; David

Rust, Philadelphia county; John Shoener, Schuylkill county; Robert W. Lohr, Somerset county; G. Eugene Bown, Sullivan county; Dr. E. E. Tower, Susquehanna county; C. H. DeWitt, Tioga county; J. Newton Glover, Union county; Homer C. Crawford, Venango county; R. J. Weld, Warren county; Jas. M. Paxson, Washington county; W. E. Perham, Wayne county; W. F. Holtzer, Westmoreland county; Geo. A. Benson, Wyoming county and Geo. F. Barnes, York county.

The following Consulting Specialists were present: Botanist, Prof. F. D. Kern; Pomologist, Chester J. Tyson,; Chemist, Dr. Wm. Frear; Vet. Surgeon, Dr. C. J. Marshall; Sanitarian, Dr. S. G. Dixon; Microscopist and Hygienist, Prof. J. W. Kellogg; Entomologist, Prof. H. A. Surface; Ornithologist, Dr. Joseph Kalbfus; Meteorologist, Prof. W. H. Owens; Apiarist, H. C. Klinger; Economic Geologist, Prof. Baird Halberstadt; Agricultural Geologist, W. H. Stout; Forests and Forestry, Irvin C. Williams; Feeding Stuffs, G. G. Hutchison and Soils and Crops, Prof. Franklin Menges.

The CHAIRMAN: Next in order is the reading of the minutes of the Spring Meeting.

Assistant Secretary Weld then read the minutes of the Spring Meeting.

The CHAIRMAN: Gentlemen, you have heard the minutes; what is your pleasure?

MR. HUTCHISON: I move that they be adopted.

The motion was seconded and carried.

The CHAIRMAN: Next on our program is the appointment of the Committee on Credentials. I will appoint as this Committee Mr. P. S. Fenstermacher, B. Frank Wambold and George F. Barnes. The Committee will please come forward and take the credentials. Next we have reports of Standing Committees and Specialists, of which the first is "Cereals and Cereal Crops," by Edward Leinhard, Chairman.

Mr. Leinhard then presented the following report:

REPORT OF COMMITTEE ON CEREALS AND CEREAL CROPS

By EDWARD LEINHARD, *Chairman*.

The year 1915 shows a higher value in cereal crops produced than any former year. Wheat, corn, oats, rye and potatoes—a total of 6,104,695,000 bushels, with an estimated value of $3,504,129,000—was 5 per cent. higher than the crop of 1914 and 25 per cent. above the five year average. The increase in value of crops was due to the increase in number of bushels produced.

WHEAT

The premature reports of the enormous crop of wheat for 1915 has materialized as fully as predicted by the authorities at Washington, the total production for the country being 1,001,505,000

bushels, valued at $930,302,000. The number of bushels for this State is estimated at 24,928,000, produced on 1,312,000 acres, the average yield being 19 bushels per acre, while the yield for the United States is 16.9 bushels an acre, an increase of 2.3 bushels above the 5 year average. The price per bushel was 6.6 cents less than 1914—92 and 98.6 cents, respectively. The damage by the Hessian fly in this State was only about one-half as great as in 1914; over one-half of the counties being affected, Berks county suffering the most, about one-fourth of the crop being affected.

CORN

The estimated value of the corn crop was 1.8 per cent. more than for 1914. The total value of the crop for the country was $1,755,-859,000. The average number of bushels per acre is 28.2 bushels per acre, with 108,321,000 acres seeded, producing a total of 3,054,535,000 bushels. This State produced 54,792,000 bushels on 1,522,000 acres. With an average of 36 bushels per acre it was 3 bushels less per acre than in 1914. This was due to the wet weather during the growing season interfering with necessary cultivation, especially on low grounds. Very little damage was done by frost; by the time that the first frost or freezing occurred, most of the corn had matured to such an extent that no extensive damage was done.

OATS

The oats crop for this country was 1,540,362,000 bushels with an average of 37.8 bushels per acre, or 8.1 bushels more per acre than in 1914 and 7.5 bushels above the five year average. Our State is 14th in the production of oats, having harvested 1,094,460 acres with an average of 39 bushels per acre, a total of 43,095,000 bushels and the estimated value $19,823,700.

RYE

The average production of rye in the State was about the same per acre as in the two previous years, 17.2 bushels per acre. The area harvested was 271,600 acres and the yield 4,672,000, the estimated value being $3,971,200. Pennsylvania ranks fourth in the production of rye; Wisconsin, Michigan and Minnesota leading in the order named.

BUCKWHEAT

The acreage of buckwheat was increased by 14,000 acres and the production 1.7 bushels less per acre than in 1914, and .1 bushel per acre less than the five year average. The estimated production of the country is 15,769,000 bushels. This State is first, with a yield of 5,540,000 bushels.

HAY

Hay ranks third in value compared with the other crops. The yield for the country—85,225,000 tons,—valued at $912,320,000, being an increase of $133,000,000 over the 1914 crop. This increase is due to the fact that there was 1,830,000 acres more in grass; also that the yield was increased by one-fourth ton per acre. The value per ton was 42 cents less than in 1914. The area cut for hay in this State was about 4 per cent. less than last year, producing a total

of 3,558,000 tons, at an estimated value of $57,572,200. The Pennsylvania farmer should give more attention to the raising of grass, because it increases the fertility of the soil, especially when clover is raised.

POTATOES

Pennsylvania stands sixth in the production of potatoes. The average yield was only 72 bushels per acre, selling at an average price of 75 cents per bushel. The average yield for the country was 95.5 bushels per acre and the average price nearly 62 cents per bushel. About 22 per cent. of the crop in this State was affected by rot, ranging from 7 to 50 per cent. in different counties. The total production for this State was 20,502,000 bushels, being nearly 8,000,000 bushels short of 1914.

According to the fall report, the acreage sown to winter wheat is 11.3 less than the preceding year. The acreage of rye is 3 per cent. less than 1914. The condition of these crops are favorable throughout the country.

The average prices on all cereals, with the exception of potatoes, were less per bushel than in 1914, this being due to the enormous crops produced and high ocean freight rates on exports. During September, October and November, 1915, the rates on wheat from New York to Liverpool were 37.22 cents per bushel, or more than four times the average for the corresponding three months in 1914; also during this period—September, October and November, our exports show 10,000,000 bushels less than the corresponding three months of 1914, while Canadian exports show an increase of 58,000,000 bushels in the same time.

But, on the whole, it has been a good year for the American farmer. The valuation of the different crops is considerable above the five year average and an increase of 9 per cent. as compared with 1914. Statistics also show that the farmer has learned to rotate his crops so as to get legumes or clover crops in the rotation. Since the early 90's, the tendency of crop production has been upward, and for the past 25 years the production per acre of crops for the country has been increasing at the rate of nearly 1 per cent. per year. With the encouragement the farmer receives from the State and Nation, and the instruction from Agricultural institutions, the American farmer is learning how to farm.

The CHAIRMAN: Gentlemen, you have heard the report; what is your pleasure?

It was moved and carried that the report be received and printed.

The CHAIRMAN: Is there any discussion on this report? If there is none, we will proceed with the next report, "Roads and Road Laws," by Col. J. A. Woodward, Chairman.

Col. Woodward then presented the following report:

REPORT OF COMMITTEE ON ROADS AND ROAD LAWS

By J. A. WOODWARD, *Chairman.*

At the Spring meeting of the State Board of Agriculture, at Lock Haven, in 1884, before your speaker was a member, he accepted the honor of an invitation to address that body upon the subject of

"Country Roads," assigned him by the then Secretary, the lamented Thomas J. Edge. The change in the personnel of the body between that date and this is almost absolute—but a single member who then held a seat, remaining a member at this time: Reference is made to the venerable Joel A. Herr, of Clinton county. May many years be added to his useful life and membership.

The great majority of those who then composed the body, including every ex-officio and every appointive member, and the great secretary, have passed. The organization remains, more representative, more widely known, perhaps; but not more disinterested or efficient in the care and consideration it gives to the agricultural interests of the State than then.

The change in the component membership of this body is not more radical than is that in the road problem which it was then, for the first time, and is now, discussing, whether we think of those who build and use the road, or the volume and character of the traffic which it must accommodate; and doubtless the end is not yet in sight. Then, outside the cities and boroughs, and aside from the hoary and obsolete turnpike, "the road," as known throughout the State, was the common dirt road, the township road, the country road. The traffic upon it was in comparatively light loads, horses drawn at a speed of from two to ten miles per hour, and for short distances.

The construction and maintenance of it had for its highest authority and directing force the township supervisor, which title was only too often a synonym for inefficiency, or "unpreparedness," to borrow a word from present day political discussions; and who was for the period of his official life, a fine example of absolutism and autocracy over all road matters within his district, and within legally defined limits. He levied a certain or uncertain amount of tax upon his neighbors, who congregated at a designated point at his call and 'worked out the tax," with no standard to guide and no authority to judge, other than that of the autocratic supervisor. Down to 1887, no tax payable in money could be levied nor collected except by order of the county court to pay an obligation already incurred for some special purpose. In that year it was written—see pamphlet Laws, 1887, Act No. 140—that the supervisors "may, and they are hereby authorized to collect, annually, in cash, not exceeding twenty-five per centum of the rates for the purchase of implements and materials as may be found necessary;" and your speaker had the valued honor of aiding in the enactment of that law, and personally amending it by the introduction of the word "materials," that a supervisor might, in time of dire need, purchase and pay for a plank or bit of timber with which to patch a broken down bridge across a little run, or buy a pick handle of a store-keeper who did not happen to be a tax payer in the same road district.

This is a brief summary of the legal machinery, power and resources for making and maintaining the one hundred thousand miles—I am using round numbers—of Pennsylvania's country roads until within the period of a single generation.

The highest types of road known were the McAdam and the Telford, which was simply a solid base for the McAdam where needed, and in a general way they were well guarded by toll gates. That a con-

siderable number of these moss-grown relics of pioneer days remain is a serious reflection upon the practical, common sense business qualifications of the people of Pennsylvania.

Now, the buggy, carriage or coach, of light weight and horse-speed, is largely superceded by the self-driven, heavy automobile going at twelve toforty miles an hour. The old, lofty Conestoga wagon, with its broad tires contributing to the permanence of the road upon which it traveled at two to three miles per hour, has given way to the ten to twenty ton truck at fifteen to twenty miles per hour.

These changes have reduced the McAdam and Telford types of road to second and third class, and made the archaic medley of old time road laws "mere scraps of paper." The road supervisor has been shorn of his autocracy, and becomes an adjunct of a State Department of Highways; and the old country road beginning at the borough line and extending to the suburban turnpike. Here let us halt.

Its efficient and available substitute, the new highway that will sustain and repel the attacks of the new, exacting and aggressive traffic, has not yet been discovered, and it is not the function of this Board, nor of its Committee to discover it. This is one of the first and most important duties of the Department of Highways. It is clothed with abundant power to secure, and equipped with funds *ad libitum* to pay for, the services of engineers and scientists whose high attainments are doubtless equal to the task. That a road which will successfully withstand the assaults of this wonderful engine of destruction can be made goes without saying; but to this time it has not been made excepting at such large costs as to make it unavailable under present conditions.

The one plain fact is that the whole public road theme, (indeed the whole subject of transportation in its largest dimensions) from the mud road to the Lincoln Highway, from the township supervisor to the State Highway Commissioner, from the two-mill tax to the fifty million dollar bond issue; from the wheelbarrow to the luxurious touring car or my lady's $10,000 limousine, is in a state of evolution.

The transportation of any and everything, which is transportable, from a thought to an army, must, in this day and generation, be conducted at top-notch speed. Whether it be hurled across a continent, forced over or under the seas, or flung through the air, the movement must as nearly as possible annihilate time and space, and the multiplied and complex problems of transportation involved are the most important ones which we, as state or nation can consider, excepting, possibly, the German, or our own, submarine. The relatively small section of this tremendous whole, as bounded by the title "Roads and Road Laws of Pennsylvania," covering an hundred thousand miles of public roads, and almost as many miles, if they might be measured in miles, of complex, overlapping, and often illy considered road laws, whose most prominent characteristic is their intricate verbosity, which is at present before us, is far too large to be more than glanced over in a paper of this kind.

Let it be briefly said that the wonderful changes in both the Roads and Road Laws of Pennsylvania, which have occurred in the third of a century since this body first took cognizance of the road question, have been steadily and rapidly though not uniformly, in the direc-

tion of improvement; and the modifications in the traffic which they permit and encourage have, in a general way, added very largely to the sum total of comfort, convenience and pleasure of the people.

As an agency in the advancement of civilization, easy, comfortable, rapid, safe and cheap transportation holds a place, than which none other holds a greater; and it is a subject of gratulation that in all of these qualifications the roads of Pennsylvania have made substantial progress within the period named. In the main, our legislation has been propitious, and its administration might easily have been worse though neither has been by any means, above criticism. In speaking thus your Committee has reference to all road laws and to all road administrations, from the youngest and most inexperienced supervisor in Podunk township to the chief highwayman, and is not knocking.

The promise for a more rapid progress in good roads is bright. The general public has learned much and is learning faster than ever before. A larger proportion of the people than ever before know what good roads are, and have a deep sense and wide-spread realization of their urgent need of it, and when the people get so far as this in knowledge, they will soon get farther and know how to get what they need.

The recognition of our law-making bodies of the necessity for the utilization of the highest possible degree of science and skill, and of a centralized control, in the furtherance of the good roads project, is evidenced by the erection of a Department of Highways, and the large powers and somewhat liberal appropriations with which they have imbued it. Notwithstanding the considerable current of adverse criticism which has been directed against it, some of which doubtless has been well earned, your Committee desires to express its confident hope and belief that through its agency there will ultimately come about, gradually improving in quality and decreasing in cost, a realization of the road users dream; a large percentage of the more important roads of the State, equitably apportioned—typified by the present system of inter-county State Highways—which shall be of easy grade, safely guarded at dangerous places, dry and smooth at all seasons of the year, hard enough to withstand the attacks of the fastest, and sufficiently well based to endure without flinching the impact of the heaviest traffic to which it may be submitted. A large proposition? Yes! But if there is any state in the Union that has the science, skill, money and material to solve it, Pennsylvania is that state. And the Department of Highways is our agency for the application of these splendid facilities to the solution of the problem. While it may not be the best possible agency for the purpose it is the only one we have or are likely to have. It is here, it has been here long enough to be settled in its bearings, and it is here to stay.

Now let us make the best possible use of it. If, in years gone by—whether with or without reason does not matter now—it lost our confidence to such a degree that we refused to give it the fifty millions it asked for with which to do a part of this big job, and is now making honest and energetic efforts to regain that confidence, let us meet it half way, and a little more; and when it has shown, like the Missouri mule, that it can and will be real good, we will authorize the bond issue and buy the bonds ourselves. We can do

it as easy as turn our hands. Something less than a century ago, when we were comparatively young and poor, we wanted better transportation facilities quite as much as we do now, and in that day canals were the best things we knew, so we undertook a system of water ways—low ways, if your please—and we authorized a bond issue of forty millions and built them through a commission. They served their purpose, were superceded by the railways, went into a condition of "innocuous desuetude," and the bonds were all paid off long ago, no one being the worse for it. We can do far more than that now and not half try. It is up to the Department to show us that it will discreetly and honestly spend, on this inter-county highway, eight or nine thousand miles long, with a fair share to the township road, and it can have the money, and we will all have the roads.

But what of this eighty or ninety thousand miles of township road, dirt road, just road, and sometimes hardly that? The road that we farmers used to get out to and connect up with the (sometimes twenty-two-thousand-dollars-per-mile) intercounty highway? That's the road which this body, representing the farmers of every county of the State, is most concerned with. The road that takes our produce to the railway station and the market; and ourselves and our families to school and to church and to the polls; the road the R. F. D. man uses to bring us our mail; the road that we use and that is used for us three hundred and sixty-five days every year; and over which, when in days unnumbered we are carried to the bit of green sward "by the little brown church in the vale."

The road system of state, or nation, for that matter, may well be compared to the arterial system of our bodies; The main arteries carrying the traffic of blood to the several main sections of the body are first to be considered of course, in order to establish the system, but the smaller and more distant ones, even smallest and most distant ones, those which supply the constant needs of the skin, hair, nails, away at the outermost boundaries of the frame, are equally important with the larger ones to the welfare of the whole body; and if they are permitted to get out of order or fail in any degree to perform their functions, to that same degree the whole system suffers. So with the township dirt road; it is quite as important to the welfare and prosperity of the whole State as is the inter-county highway, and must be maintained in the same relative degree of excellence. It must be smooth, dry and hard for at least ten months of the year, excepting only the periods of Spring thaws and excessive rains. How shall this be done? By road laws? Witness the failure of the hundreds and hundreds of laws enacted during the dead century, and now reposing deservedly in the scrap heap. By the autocracy of the unequipped supervisor? His inefficiency has been fully demonstrated. By "working out the road tax?" Enough has already been wasted in Pennsylvania by this egregious folly to duplicate the Appian Way from Philadelphia to Erie.

State aid, in science, skill and money, properly understood, broadly interpreted, liberally applied, is at this time the best available instrumentality in sight. State aid, I say, not State assumption nor substitution. The local forces of men and means must be aided, not cut out. The township unit should remain: it is the best road district, under present conditions that can be made; and all its in-

herent powers be utilized to the best possible advantage. The old time supervisor, too often unqualified and always independent in action, has already been superceded by the act of April 12, 1905, by an organized Board of Supervisors, three in number. This body is continuous in its structure by the election of one at a time, acts as a board, and, usually one or more of the best qualified citizens of the township in its membership serves as a most valuable agency for connecting up the Department of Highways and its organized science, skill and funds with the township road.

By the act of July 22, 1913, a suzerainty over the township supervisors by the Department of Highways, which makes the direct connections referred to above, and re-enacts the act of April 12, 1905, with such modifications and amplifications as establish a workability between the State and township authorities was authorized. To some of the provisions of this act exceptions might be taken by those disposed to be critical. Your Committee is not so disposed, because it establishes the principle of unity of purpose, action and forces between all the road authorities and powers of the State, and provides the legal machinery, under centralized and intelligent control, your Committee ignores its defects—which may be many but are remediable by amendatory legislation—and gives it full commendation. As a matter of fact the act has already been amended as to sections 5, 9 and 15, by the present legislature.

Your Committee is not unaware that this view of the interelation of State and local authorities and laws is diametrically contravened by some of our thoughtful citizens; and it acknowledges with very high appreciation the receipt of letters from a prominent citizen and distinguished lawyer in the southwestern part of the State, whose opinions upon the subject are the more particularly entitled to the highest respect because he has his country home in a township in which there are nearly 200 miles of township roads, who strongly inclines to this opposing view. Notwithstanding this, your Committee believes that a half century of constant use and close observance of the country road, with no inconsiderable effort toward the solution of the economic and practical questions involved, added to a more or less studious attitude toward the annual and biennial output of legislation relating thereto, justifies it in the conception above expressed.

In conclusion, Pennsylvania roads constitute the biggest proposition the State has on hand, from whatever point of view may be taken, requiring tremendous outlays of labor, money, time and patience for its accomplishment, and the one thing for everybody concerned to do is push, not kick.

The CHAIRMAN: Gentlemen, you have heard the report; what is your pleasure?

MR. BLYHOLDER: I move that the report be received and spread on the records.

The CHAIRMAN: Perhaps it is in order to discuss this topic. I think it is very important. We have ten or fifteen minutes for discussion and I would be glad to hear from any member.

MR. KILLAM: It seems to me that we can add nothing to the report and we certainly should not try to detract anything from it. It is the most even thing I have yet heard in the line of road reports, and I think the best thing is for the people to take that report after it is completed and study it and form their conclusions alone. If you want to stir up a hornet's nest, holler "Roads;" that's all you've got to do before this Board. I consider it a very able report, it is a report that has taken a great deal of time and study and I think we are very fortunate in having Col. Woodward on that Committee.

MR. DeWITT: I was very much pleased with the report. I think that is the best road report that we, as a State Board of Agriculture, ever had, but I am not wholly in sympathy with what Brother Killam has said; we are here from all quarters of this great Commonwealth, and I think that if we have not been properly treated with respect to the roads, that it is up to us to express ourselves. One thing that confronts me is the fact, if I am properly informed, that 60% or 60 cents out of every dollar that is appropriated for the roads never gets to the roads—only 40% gets to the roads and 60% is used before it gets to the roads. If I am properly informed, the Highway Department had a representative controlling two counties, as a rule; but in the last season that has been revised by putting a highway man in each county. That only adds to the expense, taking the money that belongs on the roads, and I don't know that those men were worked so hard that they could not attend to their official duties in the two counties. That money should never have been spent, in my judgment, in that direction, it should have been put upon the roads, where it belongs. We, as tax-payers, are entitled to these roads, and if we do not get them, we are privileged to kick, in my judgment, or express ourselves, at the least.

A little transaction in regard to the roads occurred in our county, Tioga. We have a connecting road coming in from Lycoming county, in this direction, and going through into New York State. A section of road there of about 10 miles was in ridiculous shape all summer, until towards fall. I don't known that our man over there was worked so hard that he could not see this road or fix it, or whether there wasn't money, as he reported, to repair it, but such things, when the money is appropriated, as a main thoroughfare like that is should be kept in repair so that the people can use it; it was worse than a majority of our dirt roads. Another thing that occurred in our district there, the floods in the summer took out a small bridge along in July, forcing the people who lived up this creek or ravine, one of our best farming sections of the country up through the eastern part of the county, the people were forced to go through that creek or over a temporary bridge up to the present time, all for the want of a report or a privilege to put in a bridge, owing to the fact that they could not get what they called a water commission to come there and tell them just how to locate that bridge. Now the people suffered that inconvenience and many inconveniences have been suffered in our county and in our neck of the woods that a great many of us people think that we are justified in saying some things some times that would not be proper to say in Sunday-school.

Now, gentlemen, I like the report, I am glad that we dare say what Col. Woodward has said, and I hope that the people who are here from all over this State, representing each county, will express themselves to the extent of how they are treated in their own individual counties.

The CHAIRMAN: Are there any further remarks?

MR. KILLAM: If we are going to criticise, I'd go for the State Highway people and complain there about this road business; this is a mere discussion of Col. Woodward's report.

The CHAIRMAN: There is a motion before the Board to place this report on the minutes as read.

The motion was seconded and adopted.

The CHAIRMAN: Our next topic is "Fruit and Fruit Culture," E. A. Studholme, Chairman.

Mr. Studholme then presented the following report:

REPORT OF COMMITTEE ON FRUIT AND FRUIT CULTURE

By E. A. STUDHOLME, *Chairman*.

The year 1915 has been a very profitable one to the fruit growers in some sections of the State, while in other sections the fruit crop was almost a total failure. Reports from some counties show that the heavy frosts of May 26, 27 and 28 killed practically all the fruit, while in the other counties that escaped the late frost the yield was good. This is especially true in regards to the peach crop. Fortunately the counties where most of the peaches are grown in this State did not suffer from the frost and the yield in these counties was very large.

This condition in the State brought very forcibly to our attention the need of better facilities in marketing our crops. In some sections the peach crop was left to rot on the ground, while in other sections they were commanding a high price. This is one of the big problems confronting the fruit grower.

It has been often stated that if we were to eliminate the middleman, the problem of getting our produce to the consumer, with the least amount of loss to both parties, would be solved. In some cases no doubt this is true, but we must have some method of distribution and where the middleman performs a service he is entitled to a fair compensation for that work. As in most lines of business we have the honest and the dishonest commission men; so have we the honest and dishonest fruit growers. The barrel of apples with the good ones on top and bottom, but with poor specimens in the middle is still with us, and as long as this condition exists we should not expect to have saints in the commission houses.

The greatest need to the fruit growing business in this State, at present, along legislative lines, is for a law compelling every shipper

to mark his name and address on every package he ships, with the grade and minimum size of the fruit contained in the package. This law is sure to come sooner or later in this State as it is already in operation in other states, and the right source from which it should come is from the fruit growers themselves.

The thousands of young trees coming into bearing will mean closer competition and the fruit grower who pays close attention to the grading and packing of his fruit will be the one to make a success of his business. Situated in the heart of the fruit growing section, with the best markets in the country for our products, there need be no fear of over production of the best quality of fruit in the State. To capture the markets for our own products, all we need is closer attention to the appearance of our package, as we already have the quality of fruit to put in the package.

The future of the fruit business is the same as the future of any other business, we will have good years and bad years, but the fruit grower who will pay close attention to his business, who will retain his enthusiasm in the years of low prices, using the best methods of producing and marketing his crops will surely make a success in the fruit business as he would in any other line of business.

It was moved and carried that Mr. Studholme's report be accepted and placed on record.

The CHAIRMAN: The next topic is the report of the Botanist, Prof. F. D. Kern, of State College. Prof. Kern presented the following report:

REPORT OF THE BOTANIST

By PROF. F. D. KERN, *State College, Pa.*

The chief problems of a botanical nature in which the members of this Board are interested are without much doubt the eradication of weeds and the control of plant diseases. The year 1915 did not develop any unusual situations regarding weeds. There was the usual correspondence from all parts of the State asking for identifications and suggestions as to methods of extermination. In the report a year ago the speaker referred to weeds and considerable interest was manifested in the subject. Perhaps it may be well to mention specifically some of the weeds which were inquired about most during the past year.

Yellow or Hop Clover was received for identification from numerous correspondents from ten or more counties. The scientific name is *Trifolium agrarium.* This is an annual plant which has been introduced from Europe. Its seeds are doubtless distributed as impurities through those of the larger clovers. It is a soil enricher as all the clovers are and can scarcely be called a weed, although one finds mention of it usually in that connection. Its bright yellow flowers are conspicuous and attract the attention of those not familiar with it. It is not new in the State, as mention of its occurrence may be found in the Report of the Botanist, Dr.

Buckhout, for 1903. It has been tried as a forage plant in some places but apparently without much success, and since it usually is possible to employ larger and better forage plants there does not seem to be much of a future for it. On more sandy soils where there are no better clovers, there might be a possibility of using it to advantage. Where it is looked upon as a weed it can be controlled by preventing seed development through early and frequent cutting. Clover and grass seeds should be watched carefully as it is through them that such plants as this are distributed.

Yellow Melilot or Yellow Sweet Clover *(Melilotus officinalis)* also attracted attention and was sent in several times. It is very similar to the ordinary white form *(Melilotus alba)* except in color, but occurs more sparingly. There is also considerable question about classing either of these forms as weeds.

An interesting sample of a tough wiry grass was received through the office of Secretary Critchfield. It was without heads, but by comparison with a similar form on the campus at State College, it was finally determined as Sheep's Fescue, botanically known as *Festuca ovina.* It belongs to the same genus as Meadow Fescue which is commonly cultivated as a meadow and pasture grass. The Sheep's Fescue is said to be used in some places in this country in pasture mixtures for sterile soils, but from our observations, we would classify it as an undesirable form. It has a curious habit of growing in tufts and dying at the center as it spreads in all directions.

Numerous reports were received of an annual plant, which has been introduced from South America, known as *Galinsoga.* If it has any other common name I am not familiar with it. It is reported as troublesome especially in gardens. The stem grows up to one or two feet and is much branched. The heads are small, about one-quarter inch broad, and have yellow centers with white rays. Every effort should be made to prevent it from going to seed. It has a shallow root and is easily pulled. In cultivated ground it is usually not troublesome as it cannot stand the tillage given the crop.

From the point of view of plant diseases, the season was marked by one or two epidemics worthy of especial mention. Fire blight, or pear blight, on apples and pears was much more severe than usual. It is present and does some damage every year. The explanation of the unusual development this year is to be sought in the nature of the season. The cool, wet weather prolonged the growing season for the trees and the time during which the blight worked injury was much extended; in fact it was present nearly the whole season, whereas, it is usually checked by the maturing of the woody tissues about mid-season. Fire-blight was bad in the other apple growing states of the East and there is at present a movement looking toward a national conference on the subject to consider methods of control and investigation.

The potato crop was affected by diseases in a very serious way during the past season. In this connection a brief reference may be made to what is known as the *Rhizoctonia* disease of potatoes. Although the fungus causing the disease has been known in the State,

this is the first season, so far as the speaker is aware, that it has been recognized as a factor in the production of disease of economic importance. The fungus works several types of injury to the potato and the plant. The main type, and the one by which it is best known, is the "black speck" or "black speck scab" stage. These hard, black specks adhere to the tubers and appear like particles of soil; but are really made up of threads of the fungus which serve as a means of carrying it over winter. The fungus also causes a scabby or corky condition of the tubers, a rot of the tubers and roots and secondary effects known as little potato and aerial potato. Sufficient of these forms were observed to make it evident that this disease must be considered seriously. It is caused by a soil organism and without doubt climatic conditions have much to do with its development, although it is not known what factors favor the diverse forms which it assumes. General methods of control can scarcely be suggested at this time. The variety, character of the soil and climatic conditions, together with the different manifestations of disease make the problem a difficult one. If it is desired to disinfect the tubers, corrosive sublimate must be used since formaldehyde as used for common scab is not effective. Rotation of crops with as long a time as possible between crops of potatoes is desirable. It should be said also that it is not possible to state what the future of the disease may be with the variable nature of our weather conditions. The late blight caused by the fungus known as *Phytophthora infestans* destroyed perhaps one-half of the potato crop in 1915. Other epidemics are known to have occurred in 1910 and 1891. It is well known that the season was marked by excessive rainfall and unusually low temperatures. The amount of precipitation and atmospheric temperatures seem not to be sufficient to explain outbreaks of the late blight, and investigation has led Professor Orton, of State College, to the belief that low soil temperature combined with high relative humidity at the proper time, late July and August, are probably the most important factors favoring the development of the disease.

An unusual outbreak of late blight also occurred on the tomato, caused by the same fungus which affects the potato. It is not known how general this outbreak may have been but it was observed in the central part of the State and was prevalent especially on the College farm, where the crop was practically destroyed. In America the disease has been known to cause losses to tomatoes in California and Virginia and has been reported also from Maine, Connecticut and Massachusetts, but has not been reported previously in Pennsylvania. No record of varietal resistance was kept but all of the thirty-nine varieties grown in the experimental plats were affected to some extent and the crop was almost a total failure. The fungus attacks leaves, stems, and fruits with about equal virulence.

Apple rust was bad in the southeastern sections and is without doubt increasing in importance from year to year. The white pine blister rust is known to persist within the State. Inspections have shown that it has been imported into seven different plantations but the effectiveness of the attempts to eradicate it are unknown. Numerous other plant diseases might be mentioned, but time does not permit of their discussion.

The CHAIRMAN: If there is no objection, this report will be received and filed.

MR. J. ALDUS HERR: I would like to say something in reference to the discussion of this paper; part of the paper would include the different seeds on the farm. In reference to the botanical side of it, that is reference to the seeds and the difficulty of the average farmer has in getting pure seeds, there isn't anything that is so detrimental in our county, as we find it, and those most detrimental to us are Canada thistle, wild mustard and buckthorn. I can well recollect the time when all three of them were practically new to our county. At a meeting some weeks ago, at an agricultural meeting in my neighborhood, we took a vote in the meeting as to what percentage of the farms in the neighborhood were free from Canada thistle, and I actually believe, if the members would have told their convictions, that there was hardly a farm in the neighborhood that was not polluted at the present time with the pest. A year ago while buying my clover seed or when I bought it, I bought it on a guarantee to be practically free from obnoxious weeds. I sent the sample to Washington and had it analyzed. In the analysis of that sample there were 117 weeds to the square rod, if you please. Among them were three kinds of sisal seeds and two dodder seeds. Now I bought that in good faith and have no regrets. My neighbor bought some oats and he had a most beautiful crop of wild mustard. Now that is the side of the report that I would like to see discussed and know what remedy we have, for there isn't anything, in my judgment, on the farm that is so difficult to go up againt as weed seed. It is not a question of price, but it is a question of getting what we want. I would like to hear this discussed a little.

MR. HUTCHISON: We are endeavoring in our Bureau to try and do the best we can under this new law, in the way of giving the farmers pure seed. The only trouble we find is that the standard that the Legislature enacted into this law is not high enough; it says 97%. I tried my very best to get 99 and then dropped to 98, but unfortunately there were some farmers on the Committee that opposed it, giving, as their reason, that it was impossible to produce that standard of seed on the Pennsylvania farms. Now we have been examining hundreds of samples of seed in the laboratories, and for the small sum of 25 cents you can have your seeds tested here in your own State by a chemist who has had experience and who has taken training in the Department of Agriculture at Washington and is doing splendid work. If Mr. Herr had brought that to our attention at the time, I believe that under our Act of Assembly, we might have been able to have brought prosecution if the evidence had been all right.

MR. J. ALDUS HERR: I have that report at home or know where I can get it. I gave it to our Association. It was signed by the Government and I know where the seed was purchased.

MR. HUTCHISON: Was it purchased in our State?

MR. J. ALDUS HERR: That I cannot tell you now, but I can find out as soon as I go home where it was purchased, or rather through whom it was purchased.

MR. HUTCHISON: A few prosecutions brought against an offender like that would have a good effect in the Commonwealth today. I find that the men who are dealing in seeds and shipping into our State are very anxious to comply with our law. Our law allows one Canada thistle seed in 3,000 to exist. I never could see why that was put in the law, but it is there. There is no worse curse on the farms of Pennsylvania today, and especially on the limestone farms, than Canada thistle; it seems to love limestone. It will stay on good soil; I don't believe they are troubled with it on thin soil nearly as much. We are here to try to help you and aid you farmers in enforcing this law, but I am going to make a recommendation tomorrow that you try and have the next Legislature increase the standard at least to 98% of purity. Now these states outside that come in, these shippers in those states will mark their's 99 in your county, in Lancaster, and others where there are large seed stores, and it is a great subject. If you don't have good seeds, you cannot raise good clover, good alfalfa and good crops. It is the same as raising a crop of anything, you must plant good seed if you want good men to grow and good women; in this Commonwealth we have got to have good teachers and good instructors and lay good foundations. I am glad to hear this discussion and I hope next year when we go after it we will be able to bring about a reform of this kind.

At this point Governor Brumbaugh entered and was received with applause, and a recess of five minutes was taken to allow the members of the Board to shake hands with him.

The CHAIRMAN: At this time I am going to call on Brother Hutchison to say something in regard to our Society.

MR. HUTCHISON: Mr. President, your Excellency the Governor and the Secretary of Agriculture: Just a moment ago, your President came to me and said, "George, can't you say something about who we are and what we are and what we are doing?" I replied,"That would be a great pleasure, if I had time to go back and find out all about us;" but I picked up the law here under which we are working, and I find that the Board of Agriculture was created in 1876, the Centennial year, and that this Board was brought into existence on the eighth day of May. At that time there was no agricultural society in the State—I believe there was one, an old farm association, but the thought and the demand that had been made on the people of Pennsylvania— it came into the minds of some of our forefathers that they should establish some agricultural organization, and this Board was established and I know there's a gentleman here that can give a better history than I can, because he is one of the original members; and that is Col Woodward; am I right?

COL. WOODWARD: No sir, John Hamilton, either John Hamilton or Dr. Hale.

MR. HUTCHISON: Dr. Hale, of Bedford, who owned at that time a large number of farms in Centre and Mifflin counties. This is the class of men, Col. Woodward, Thomas J. Edge, who laid the

foundation for agricultural education, and that great man of Washington county who was a large sheep grower, who raised the sheep that grew the wool, that made the suit for President McKinley to be inaugurated in—Mr. MacDowall. These are some of the men who started this organization. Now, your Honor, the Governor, the men of this organization are men who come from each county, elected by the old agricultural societies in the counties, which send up these representatives here and have held together for these many, many years. They have held the farmers' institutes throughout the different counties; they have spent their time taking eight, ten or twelve days each year without money and without price, going up and down in their way teaching agriculture, helping lay the foundation for the many great organizations that have come into existence since that time. They are here today from the different counties to welcome you, to look into your face and you into theirs, and see what manner of men they are. They come from all walks of life. We have here with us today the doctor who is a busy man and lays aside his work, who owns farms and goes out and tries to help his neighbor; and then we have the active farmer, the men who have left their work at home and come here to spend this time and to go home and go out and teach agriculture. They represent the parent society; from this society has sprung the different societies, the horticultural society and the dairymen's union and all other kindred societies, and they are the men who have stood back of the Department of Agriculture in its organization and have stood back of State College in its work and taken its message out and taken its professors and teachers out throughout the Commonwealth so that they might bring their story to the people, and we are here today to meet you and greet you and are glad that you came from the farm. I had the honor of knowing you in the hills of Huntingdon county where your farms are located and where you have stood with father and mother on the farm and know the trials and tribulations we have and which these men have to meet, and the problems they have to meet. I want to welcome you here today in their behalf and say to you that we are with you in all good work for the betterment not only of the farm, but of the people of this Commonwealth, and may God speed you in your undertaking.

ADDRESS OF GOVERNOR BRUMBAUGH

Mr. Chairman and Gentlemen: I had the pleasure a year ago, at the meeting of your body, to speak briefly to you down in the other part of the city. We have now passed through one year of our work and are up here onthe Hill and it is a peculiar source of pleasure and of gratitude to me that we can meet under the peaceful and satisfactory auspices that surround us here this beautiful morning in our Capitol Building. You gather from all parts of Pennsylvania; each of you knows in a very intimate way some one section of this great imperial Commonwealth, and if in some way we could build together what each one knows and make out of it a composite picture representing what all of us know, there would arise in our souls a picture of the finest Commonwealth that God ever set in the world. That is your heritage and mine, and it is a source of gratitude just to be born and to live in as fine a state as Pennsylvania, and I should like, this morning, first of all,

to impress upon you the fact that Pennsylvania is a fine, splendid place in which to live, in which to rear your children and in which to perform your daily duties. Don't get into your soul the thought that by migrating elsewhere you could largely improve your conditions. It is incumbent upon you and incumbent upon me to make the conditions here in Pennsylvania so fine that we will all be glad to stay and to welcome others to help build up our great Commonwealth. (Applause) It may be known to you, I think it ought to be, that during this year it has been my conscientious endeavor to try to improve the agricultural conditions of Pennsylvania because her soil is her permanent and splendid asset; not what is under it, but what it itself is and that which springs from it under the care and cultivation of wise and prudent men in Pennsylvania. Now anything that we can do, as a people, in our organized and official capacity, we ought to do to increase the returns, the rewards of industry upon the soil of Pennsylvania. Substantially 11% of all our people are farmers, are engaged in this occupation of producing food for the other part of our population. The number is too small and there should be an increase in the number of people who cultivate the soil of Pennsylvania.

That is a serious matter to which you have turned in one way or another probably during all the years with which you have had to do officially with that problem. So long as we buy food in large quantities from outside the Commonwealth, so long as our people are dependent upon foreign markets for the food to sustain them in their daily toil, we are not working Pennsylvania to its maximum service to itself, so that anything that we can do that would improve that condition ought to commend itself in a very definite and in a very practical way to all of us.

Just in a word. I was convinced a year ago and I still entertain the thought that if we can put good roads to the farms of Pennsylvania so that it will be easy to transport the crops to the market, that within itself is an important service, and I submit to you, conversant as you are with the several neighborhoods of the State, that we have actually done something in that direction and we shall do more as the years go by. We have also had passed and put into operation a new law, in a way, re-organizing the Department of Agriculture here at the Capitol, and I have the very great satisfaction of my soul to say that we have put at the head of that department a most capable, a most conscientious, and splendid man, Mr. Patton, (applause) who is not only interested in everything that makes for better farm conditions in your Commonwealth, but who has the judgment, the insight, the executive capacity to help you in definite ways to that end.

Now, further than that, there is a matter which I think none of you have as yet sensed. We have put in operation here in Pennsylvania a Workmen's Compensation Law, which, by a special act of Assembly, excludes—I mean, a child labor law—which excludes farm labor and domestic service from its provisions just as the Workmen's Compensation Law does. I wonder if you have thought what that means, whether you have analyzed the far-reaching purpose bedded deep in that child labor provision? It is a definite attempt on the part of the Executive and his friends and the friends of the

childhood of the State to make it easy for boys to stay on the farm and in the home, where they ought to be, instead of flocking to the industries at a premature age to try to earn a small pittance which fixes them as cheap toilers all their lives in our villages and manufacturing centers. You will know more of that as the years go by and see the wisdom in the operation of that law.

Now I am interested also in another phase of this problem which your Board of Agriculture and your Commissioner of Agriculture will be working out with your co-operation and help, I trust, during the coming year. It is not enough to grow your crops, we have got to see that these crops find a ready and a good market and the marketing facilities for the farm crops of Pennsylvania are so very much below what they ought to be, that every man in this State who is interested in it's welfare ought to give serious support to a movement that will increase the marketing conditions and facilities of Pennsylvania. (Applause.) We ought to make a complete survey of our soil and advise our people in a definite way as to the method of treating it and caring for it and securing from it its maximum return for the efforts put upon it.

There is another matter in which I am deeply interested. I believe that this Department of Agriculture should have, and I think in the near future it will have, an expert man or woman who will be able to go to a farmer who sends for him just with a postal card, and, without cost to the farmer, advise him upon everything in which he is concerned for the betterment of his family and his property in Pennsylvania.

Now, having in mind at least three things in that which have all come to my attention because of my study of the State in recent years, first of all, to see to it that the drainage from our barns does not reach the source of water that our families consume. Now, that may seem a small matter to you, and yet there are farms in this State today whose buildings are so located that the menace from typhoid fever is an increasing one by reason of the improper location of the buildings, and it is infinitely better, gentlemen, that the Commonwealth should have a pound of prevention rather than a ton of cure in matters of health and the preservation of human life.

Now the second thing would be to work out the problem on that farm of reducing the effort of performing the farm duties to a minimum. I know farms in Pennsylvania where the women and children and indeed the farmer himself, are practically worn out at the end of the day because they have to walk three or four times as far as necessary to perform the duties around the buildings morning and evening. The thought of that! Economy in steps means economy in energy, in strength, and therefore increased efficiency on the farm. And then I should like also to have some attention paid to the setting of a man's farm property so that when he wants to sell his property, it will appeal to the purchaser not only as a desirable thing from the point of view of its productiveness and from its accessibility, but from the point of view of its appearance to himself and to his friends as they travel to and fro before it. Some of our beautiful farm buildings in this State are sources of great pride to us, and some of them are so forbidding and ugly and unsanitary that it is a positive shame to look upon them or to note that they exist in this great Commonwealth. (Applause.) Nobody

is to blame for that condition; it is an inherited thing, something that we have gone on and done and done and done, each man in his own way, by the best light that he possesses. The Commonwealth ought to come in there and without one cent of expense to the farmer give him scientific guidance in producing maximum satisfaction in the treatment of his farm buildings and farm property. If we can do that, we will have done something worth while.

Finally, because I must not trespass upon your time, I have in mind another thing I want to lay before you. Last year, after four months of rather earnest effort on the part of the Highway Department putting our roads in condition that was at least as satisfactory as the money at our command would permit, we organized a thousand mile tour in Pennsylvania to see our highways, and we actually carried people on that tour who did not believe that Pennsylvania had that many miles of good roads, and we had to, mile by mile, work that thought into their systems until it became a fixed and demonstrated fact that it was true. The truth about the matter is, that next to the State of New York, Pennsylvania has the largest mileage of good roads of any state in this Union and she has built them without a dollar of bonded indebtedness upon the Commonwealth. (Applause.) Now we are going to increase that amount of mileage and we are trying, with all the energy and skill and honesty that we possess, to make the money of the people count in the road problem.

Now what would you think and how would it appeal to you good people if, next Autumn, instead of going out on a road observation tour, some of us would organize a party and come out and see what kind of apples you have grown in Pennsylvania? (Applause.) What kind of pigs you have got on your farms in Pennsylvania, and what kind of corn you are growing in Pennsylvania, and what kind of babies you are rearing in your homes? (Applause.) And bring the whole administrative side of your Commonwealth service into sympathetic touch with the man on the farm, who is the prince of Pennsylvania, who is actually making good, in a modest way, on a little bit of God's green earth. I'd like to see that man; wouldn't you? And I believe that a plan of that sort, properly worked out, would call the attention of our whole population to our farm conditions in Pennsylvania, would result in all the necessary remedial legislation that we have a right to seek, and start this work under Secretary Patton and the new Commission on a road of development and of progress and of health to the farmers of Pennsylvania in a way better than any other that I can conceive of. If you know of a better thing to do, if you think of a better plan, let us have it, we want it.

Now, finally, therefore, this being all, sums itself up into the one thought in my soul. I want the service of the Commonwealth, for which I am in a large measure responsible, to make good on the soil of Pennsylvania, to count in the increase of the crops of the farmers of Pennsylvania, to count in the cheapening of the cost of food in the congested centers of our population, and to bring about such a co-operation and sympathy between the rural and the urban populations of the Commonwealth that every thing that counts for the good of one shall count for the betterment of the other; that we shall build up here in Pennsylvania a solidarity of population and a sympathy and co-operation that will make all of us increasingly proud of the

grand old Commonwealth that God has put in our hands to care for. Thank you very kindly for your courtesy this morning. (Applause.)

The CHAIRMAN: Gentlemen, I am sure you all want to hear from your new Secretary and I take great pleasure in introducing Secretary Patton. (Applause.)

SECRETARY PATTON: I did not expect to say anything at this time, but I do want to meet with you and go over some matters. As the Governor says, he expects to do great things, and as I am the executive of the Department, I suppose he will expect of me the fulfillment of that promise to you. I was listening while Mr. Hutchison was talking, and it seems that the Department of Agriculture is the creature of this body. If I know the history right, the Secretary of the State Board of Agriculture, was given office here and from that the Department of Agriculture started. Is that right?

A Member: That is correct.

SECRETARY PATTON: So that I am your child and I am here to try to do the best I can for the State of Pennsylvania and its agricultural interests. I want the help of every one of you. I want you to feel free to come to me at any time and discuss matters you think you ought to. If there are any kicks, come to me, I want to know them first, I don't want you to be giving them out to somebody outside. If you hear of any dissatisfaction, I will be glad to hear of it, and if there is any way to correct it, we will correct it, or try to, at least.

There are some things we cannot do and I do not think we will be expected to do impossibilities; but I have talked with the Governor about this trip over the State and I am very anxious to have that accomplished, and I would like you gentlemen today to suggest what you think would be the best time for us to make that trip. My idea has been along about the last of August, about harvest time, when the apple trees, the fruit trees, are at their best. I wish, during the meeting sometime, that you would discuss that and let us know about what time you consider best. Our idea was to make a three weeks' trip of it, taking three days each week, start out for three days in one week and then go three days the next week, and the next week three days, taking different routes and getting new people interested each time, getting the town people out in the country to see what the farmers are doing and getting the farmers acquainted with the town people. I believe that is all I have to say at this time. (Applause.)

The CHAIRMAN: Our next topic for discussion is the report of the Pomologist, Mr. Chester J. Tyson.

MR. TYSON: I wish to say, that following our practice of the last few years, it has not seemed wise to undertake to cover the whole subject or even the whole business side of apple growing, but to take one or two special points that may be made before you and which, by their emphasis, may be given some particular value.

Mr. Tyson then submitted the following report:

REPORT OF POMOLOGIST FOR 1915

By CHESTER J. TYSON

Your Pomologist is again confronted with the problem of making a report that will be of some value to the Board, at the same time coming within the scope of his observation and knowledge. There has been neither provision nor opportunity for extended survey or research, and this raises the question whether a purely scientific Pomologist, with research material at hand, might not better serve the Board than a plain apple grower can do. The report of the apple grower is bound to review the business rather than the science of Pomology. Moreover, the commercial apple grower finds it nearly impossible to confine his observations to conditions in Pennsylvania alone. The subject is so broad and the scope of the business is so far reaching, that state lines cannot bound it. So closely are the interests of the different sections interwoven, and so generally are the same large markets used by all, that general consideration of country-wide conditions seems wise and most likely to bear fruit. The 1915 crop was a hard one to estimate in advance and nearly as hard to review. Several influences have contributed to bring about these results.

As noted in former reports to this Board, there has been a widespread epidemic of apple planting, beginning nearly fifteen years ago, reaching its height 4 years ago, and decreasing to the present time. Millions of trees have been planted, most of them in rather well defined and long established apple sections, but in many cases entirely new orchard sections have been developed to a really tremendous degree, notably some of the mountain districts of southern Pennsylvania, western Maryland and West Virginia. Still other plantings, some of them really very large and aggregating numbers almost beyond conception, have been located here and there throughout the whole country, including Canada. These new orchards are beginning to bear in such numbers that no crop estimate is of any value unless it figures them as a considerable part of the whole and none of the crop estimating machinery now in use seems to be equipped to consider these outlying, heretofore unreported sections at all.

Local Spring frosts put some sections entirely out of business, giving the impression of a crop failure, while only a few miles away there may have been no frost and a heavy crop resulting.

Pear blight, on apple, particularly the blossom form, was more prevalent than usual, in many cases actually destroying the crop; while in other cases the only result was to thin the setting of fruit and leave plenty for an abundant crop. General report, however, pronounced a crop failure throughout the whole southern section where blight was common this year.

A still further difficulty encountered in crop estimating, is the feeling on the part of many growers, fostered by various organizations and publications, as well as by some public officials, that it will be to their advantage to have the crop underestimated, thus making it most difficult to get a true report from the very people

who are best able to give the facts. This is a form of dishonesty that is hard to understand, for in the end it deceives no one quite so much as the growers who practice it. Further development of this report will perhaps make this point clear.

Various estimates of growers' associations, apple dealers' organizations and the Division of Markets of the United States Department of Agriculture, placed the 1915 crop at from 60% to 80% of the 1914 crop which was a very large one. Stress was laid on the improved industrial condition of the country.

Now, apple buyers as a class, have a peculiar characteristic. Contrary to the common belief, they are easily deceived in the matter of an apple crop, for they want to believe that good prices are ahead and lend willing ears to just such reports as were common the past season. This was the result. Apple buyers were active, competition among them was keen and in the end all the apples that could be bought in the large commercial sections were put under contract at from $2.50 to $3.00 per barrel f. o. b. for the No. 1 fruit. Now, there was no market in the whole country that would warrant these prices during the months of harvesting, but the dealers felt that the future was safe, with this result: On January 1, the storage houses of the country contained nearly one hundred thousand barrels more apples than at the same date one year ago, bought or held at prices that no market has been willing to pay up to this time. Apples have been held for higher prices with the hope of coming out whole. Consumption, quickly affected by advancing prices, has been curtailed, and most dealers have now given up all hope of avoiding a loss. The trade in general—will come up to the next buying season feeling that the growers owe them something which they will proceed to take if they can. Growers who did not sell at harvest times are of course meeting the same market conditions as the men who invested in fruits, and like them, are now suffering the result of under-estimating and over-valuing the crop.

Conditions are changing in the marketing of apples, as in most other lines of commerce. Comparatively few years have passed since it was unusual to keep apples through the winter under refrigeration. The value of a barrel of apples at harvest time in those days was the price it would net if shipped to market and sold. There was no speculative buying, consequently no need of crop estimates. Today nearly all winter apples are either sold to a dealer who speculates on future values, or held by the grower in case his estimate of future worth is higher than the price he is offered at shipping time. This makes it exceedingly important to have at hand the best available information as to the quantity and quality of the crop to be marketed, and the business condition of the country that is later expected to buy and consume the fruit.

I have developed these details with the hope of emphasizing the importance and value of a real crop estimate, and the dangers that accompany under as well as over estimating. From time to time you will be called upon to contribute to the information on which these estimates are based. I would urge that you make your reports as nearly as you can in accordance with the facts and that you bear in mind, always, the ever increasing number of new orchards just beginning to bear.

Perhaps we cannot use our remaining few moments to better advantage than by calling attention to the great changes that are being made in the harvesting and packing of the apple crop. Not many years ago, and most of you will remember it, the common practice was to pick the apples in great piles in the orchard, piling them on straw to keep them clean and usually covering the apples with corn fodder to prevent sun scalding.

Next followed the practice of pouring the apples direct from the trees on packing tables and running them into barrels ready for market. This was a great improvement over the former plan for it made less work; it avoided ripening and decay and it put the apples into the barrels clean and fresh as they came from the tree. Still greater changes are now taking place, and each year more and more of the larger growers are building packing houses and are bringing all of their apples together under one roof for the purpose of grading and packing. They find that, including the cost of hauling, they can do much cheaper packing, and can do far better work than ever was possible in the orchard. This change has also opened up the possibility of mechanical grading, and not a few growers have installed machines to accurately assort their apples into several uniform sizes for packing.

While being neither a prophet nor the son of a prophet, your Pomologist does register his guess that ten years from now, perhaps much less, will see apples as generally and as carefully sized as we now see practiced with oranges. The buying public will demand it and it will pay to meet the demand.

The CHAIRMAN: Are there any remarks?

MR. FENSTERMACHER: This report is excellent. Our trouble is on the consumption, apples being locked up and not for sale held until the prices expected to go up. The New York State law has acted against us too, in our section of Pennsylvania. While it prevents them from putting up their stove-pipe barrels, putting trash into barrels and labeling them No. 1 apples, it does not prevent them from loading them in bulk and bringing them by the carload into our markets, and today pretty fair Baldwin apples sell at $2.00 and $2.50 a barrel in the City of Allentown, and that applies to Lancaster and other towns in the State. They are taking the place of our good apples, they are being dumped into the State wholesale and that reacts against our interests, I think, but all the same, the under-consumption of apples is the main factor; there is no doubt about it. With all the increase in population, the consumption of apples has not kept pace with the banana and orange and other things which are growing cheaper—and grapes—and are taking the place of the apple. Either we have not advertised apples enough or they have been too high; for sometime people have got out of the habit of eating apples, it seems to me, in certain respects, and unless you begin to bring to the attention of the consumer that the apple is the best and healthiest fruit grown under God's sun, we will simply have the same condition and even worse when all our young orchards get into bearing.

MR. J. ALDUS HERR: I wish to say one thing with reference to the apples of Lancaster. Lancaster has quite a good market, at least we think so, and not more than a few days ago you could find plenty of inferior or medium sized apples; but strictly good, first-class apples were selling at 25 and 30 cents a half peck and you didn't see many on the market. Now the price is just a little too high for the average consumer; but you can find a good many apples in storage that were brought there in carloads, bulk, but you don't find many good, first-class apples, and I think it is because the price is absolutely prohibitive to the average person that can buy them.

MR. HUTCHISON: What is the price?

MR. J. ALDUS HERR: Twenty-five or thirty cents a half peck. The others sell for fifteen cents a peck.

MR. DE WITT: A friend of mine from New York three or four years ago was visiting my house, he and his wife, and we had some apples on the table and she said "Mr. DeWitt, it does me good to get hold of a good apple to eat. We live in New York City;" and her husband is connected with the transportation company there and holds a very lucrative and responsible position and knows a great deal abut the shipping that comes there by boat. She said "We can hardly get a good apple in New York City, and if we do, we have to pay an exorbitant price for it." I asked, "What do you pay?" She replied "We give 25 cents for two quarts." That fall apples sold from this section or from Pennsylvania, in different places, for only $2.50 or $3.00 a barrel. I said, "What is the occasion of this?" Her husband spoke up and he said: "You'd readily know the occasion why we pay this, when there are barges of apples that are run way out into the ocean and dumped—good apples." "Merchantable apples?" I asked. "Yes sir, merchantable apples, good apples," he replied. "What is that done for?" He replied, "It is to make us fellows pay 25 cents for 2 quarts of apples." Now you people that grow apples want to get after some of these fellows that will perpetrate such a trick upon the trade as to take fruit, because they cannot get the price that they want to get, or because they want to maintain a certain price, take it away out in the ocean and dump it when there are thousands of poor boys and girls and families that would like a good apple.

MR. HUTCHISON: We have Brother Creasy and Brother Runk here, representing agricultural interests; we would like to hear from them.

MR. CREASY: I have a somewhat different idea; I think one thing that has hurt our apple trade more than anything else is the bushel box of fancy packed apples, and some of my friends I think paid $8. or $9. a box for them. The average man wants just as good a thing as the other fellow has. He cannot buy these apples and pay $2. or $2.50 a box for them and he can buy the very cheap apples my friend is talking about that have been dumped on the market, but the average good apple that is the apple he ought to buy, it seems we don't fix it so that he can get hold of it. We formerly had the apple

barrel, we bought apples in our country years ago at $5. to $7. a barrel, but that day has gone by because most of our people cannot keep a barrel of apples long enough.

Now I think we want a different receptacle or measure to sell apples in. We don't want the apple box, we don't want to fool around half an hour to pack a bushel of apples; they must be uniform in size, but I believe if we had some kind of a bushel measure that could be packed quick and were all good apples, not necessarily all of one size, the man could pick out of that bushel just as nice apples as out of a box—not all, of course. Those apples ought to be sold at a reasonable price. The first thing I think is wrong is that we don't talk apples enough, we don't advertise the apple as we ought to, the benefit and the healthfulness of having apples. These other fruits come in the market and are taking the place of apples to a great extent just because we don't try to sell them as the consumer wants to buy them. I believe it is possible to have a measure or some kind of a box that holds about a bushel that can be picked quickly, that will look neat and be within reach of the ordinary consumer, and then we have got to get some system about selling these things and have some uniformity about the package so that the fruit is good. Those are some of the things I think we could look up, but I believe the apple box really has hurt our apple market more than it has done good, because when you pick a barrel of apples and put it into those boxes, you are spoiling the market for the barrel of apples and the ordinary fellow wants just as good a thing as the other fellow, but he can't afford to pay the price.

MR. HUTCHISON: We would like to hear from Mr. Runk, Secretary of the State Horticultural Society.

MR. RUNK: I am not Secretary of the State Horticultural Association any longer. I am one of those prospective producers that Mr. Tyson told you about. I have invested what little money I have in commercial apple growing and have come to a conclusion on some of the matters that have been presented. One thing that has hurt the retail apple trade seriously, friends, and that you people ought to be able to correct, is this inimical law that fixes the weight of a bushel of apples at fifty pounds. It has enabled a lot of dealers to buy apples at the enforced weight of fifty pounds to the bushel and retail them as they choose. Pennsylvania growers ought to have a cubical content measure as our standard bushel; cubical contents ought to pass apples of the grade Mr. Creasy was just speaking about. I think that law ought to be repealed. I know the weight was cut down to 45 pounds, but yesterday I shipped a standard bushel of apples that contained more than a bushel of carefully hand picked apples and it weighed less than forty pounds, and if I had not marked the cubical contents, I would have been liable under the law and that is an unjust proposition.

I am in sympathy with what Mr. Fenstermacher said, because right in the town of Huntingdon there are two dealers buying carload lots of these inferior culls, New York apples, and selling them to the trade, not as what they are, but as apples, and the only kind, they maintain, they can get; consequently they force the farmer to hawk them around on the street in competition with the price they can fix, and

they get those cull apples very cheaply. We must pass a law in Pennsylvania to determine the standard grades of Pennsylvania apples. I think our Pennsylvania Horticultural Association is pledged to work for some kind of legislation like that, and this year I think you people ought to go on record for the same if you are interested in apple growing, and perhaps we will pass a law excluding those cull New York apples. I don't know whether you can do that or not. I am in sympathy with the man who says we are producing all the apples we should produce, or the best apples. A large part of the dissatisfaction with reference to the local retailing of apples is caused by the very inferior grade of apples which the ordinary fruit grower produces and sells on the market, and for a poor price, of course, and consequently when we got into competition with that kind of apples with good apples, the good apples don't get the credit they ought to have. If I might, as a young man, contradict what Farmer Creasy has to say, I believe there is a place for boxed apples but it is not to the exclusion of the other grades of apples. There is a market, a city market for boxed apples, but boxed apples ought never to be thrown into the great industrial centers where the poor people buy apples, neither ought their price to conflict with that of well picked apples. Every fruit grower's association must get together; we need better co-operation, we need a little bit of organization that will enable apple growers to put their own product on the market. There is a man here that has done a whole lot better work than I have done and more of it and has worked along our line as a member of our Board. I would like to hear from Mr. Smith, of Lewistown.

MR. SMITH: As I am a young man just starting in this line of work, I do not think you can look for very much from me. In regard to Mr. Creasy's opinion of a different pack—I saw a pack that I believe comes up to the requirements; it is a cartoon; there's four layers of apples put in, twenty-five apples to the layer, so that it contains 100 apples to a box. They are put in layers the same as egg crates, with divisions. These apples are run over a grader and they run two and a half tc two and three quarters and three inches in diameter. These cartoons cost about 14 cents, where the apple box cost 17, and they can be labeled 100 apples two and three-quarters or three inches and you get away from the weight question in that way. It makes a very nice, neat pack and I would think it is the very pack we are all after. It is the one that pleased me most of any I have ever seen.

MR. STOUT: I am interested in this discussion because I am not so young as some of you, but I have been at it a good many years. We have a market in the coal regions for a great deal of fruit, and sometimes the market is glutted with this same kind of fruit we have been speaking of that is brought in in carload lots. I ordered some of these boxes from a firm in Adams county and packed some of them to sell in competition with the western boxed apples, and the apples I packed were just as nice as they grow anywhere. I sold my apples for $1.25 a box, and the western apples, they pay $2. to $3. a box for apples not any better. The other day I was in Pottsville and spoke to one of my customers. He had some nice apples all wrapped separate; I says "I suppose you sell those two for five cents?" He says

"No, I get five cents apiece for those." There seems to be a sort of infatuation among people to spend five cents; its five cents for the moving pictures and five cents for fancy apples. I sold my apples for sixty cents a bushel.

MR. TYSON: Two or three speakers have touched on what seems to be the real difficulty in marketing apples, that is the cost of getting apples to the consumer, and one of the largest items in that cost is the overhead expense of the little broker who is selling these two-quart lots of apples. If the consumers in our towns and cities could equip themselves so as to use a box or barrel of apples, the difficulty would be largely taken care of; the prices that really do result in curtailing our consumption would be changed entirely by that process. I don't know that it is a thing we can ever hope for, because the method of living in the city, in flats and the way modern houses are built does not take into consideration keeping a barrel of apples or a bushel of potatoes, but if such results could be brought about, the largest item in the cost of delivering products from the farm to the consumer would be taken care of.

PROF. SURFACE: There is where the advantage of such a package as Mr. Creasy has mentioned comes in. For the past two years we have used what is known as the Michagan Split Bushel Baskets, packing apples in them at the orchard and sending them to storage and selling them from there, and it has proven very satisfactory, compared with the few families who would buy a barrel at a time as the unit of their buying. The grocer must buy the barrel and break it into smaller quantities and retail them, and necessarily he will charge for that, and in the use of the smaller package like the bushel basket we have the solution of the problem of the householder who perhaps does not have a cellar in which to keep fruit. He will buy a bushel at a time and keep them till used, but he can scarcely buy a barrel. The fancy box package seems to scare off the ordinary consumer who has to buy for an ordinary price and uses a considerable amount. I think from my experience and observation, that they will buy the bushel basket not laid in a fancy manner sooner than they will buy the bushel box, and of course they can buy them cheaper because such a basket can be packed in one-tenth the time and sold for less than we can pack a box, but what we need in this State more than anything else is certain kinds of legislation favorable to the fruit grower. We need legislation that will make it possible to have our fruit more easily handled but less roughly handled by the transportation company. We need something that will make it possible to grade and mark our fruit according to the grade of the package, that will show us just what is there and not something else. I have tried hard to get some such legislation. We want legislation regulating the commission men. They came from the city to the capital here and defeated the legislation to regulate them; the farmers and fruit growers did not come up or they might have had it. The grape growers of Erie county, small as they are, got a law in this Legislature exempting their grape packages from the necessity of marking, but did not exempt any other kind, just because they got together and knew what they wanted and requested it, so the three forms of grape baskets do not have to be marked when the material is sold in them,

but all other fruits have to be. We can have laws by which we can sell a bushel for a bushel instead of selling 54 pounds of apples and all that sort of thing, but it is for the farmers and fruit growers to get them.

The CHAIRMAN: Our time is getting somewhat limited, and if there is no objection, this report will be received and spread on the minutes. I think the Chairman of the Committee on Credentials is present.

MR. STEVENS: You will pardon me a minute, but at sometime, at your convenience, as I am much interested in the subject under discussion, and would like to say something.

The CHAIRMAN: Very well, Mr. Stevens, perhaps we'd better have that right now, we have a little time. I think Mr. Stevens needs no introduction. He is the agriculturist of the Lehigh Valley Railroad and has been a great support to us in Bradford county in agricultural work along the line of the Lehigh Valley. I take pleasure in introducing Brother Stevens.

MR. STEVENS: Mr. Chairman and Friends: I had this matter in mind when I came down here, the matter of markets, and I was particularly anxious to say a few words on it because of the conditions which are existing in New York State where they have made an effort toward controlling this matter by legislation. They have done so there two or three times. First, there is a very severe law grading apples. Not only does the law specify the grading of apples very minutely, but it affixes heavy penalties for violations of that law. Next, they have established there a Bureau of Foods and Markets where the apples—and they began on apples, although some other materials are used—are taken from New York City and auctioned. Now regarding some of this matter, I don't know that I care to be quoted, but I am speaking to you frankly, as I have always tried to speak to you frankly. The Bureau of Markets, in the first place, is founded upon a most excellent idea, but it is not fulfilling the purpose in New York State in the marketing of fruit that, in my mind, it should, and the reason for that is this; it presupposes that the fruit of New York State should go to New York City, there is the only place where a market is held. The fruit of New York State does not go to New York City.

I made some very careful records of the fruit coming from along our line, the Lehigh Valley Railroad, and only 5% of it went to New York City the rest of it came down through here and went to Philadelphia; it goes to Altoona, goes to South Bethlehem, to Scranton, to Easton, etc., etc. The result of that food and fruit market has been to throw all the fruit into New York City in addition to what naturally went there, and today there is a great quantity of stuff in New York City for auction and not a proper distribution of that fruit. Do you catch the idea in my mind? And it is evidently the intention of the men here present who are guiding the thought of agriculture in Pennsylvania, to do something better in markets and no one knows better than all of us combined that something in that line is needed. The business should begin at the other end. There is material marketed that should be stored in the country, as I have

said before this body time and again, so that when the markets are open, it does not have to go to New York City or Philadelphia, but can go where the market demands. The storage should be out in the country and not in the principal consuming centers of the State. So far, so good.

Now then, I want to take up this matter that Brother Surface has brought up. It is true and absolutely true that we cannot co-operate in the sale of our fruit unless we have a standard pack which is reliable. If we make up a carload of stuff, half of it of nubbins and the rest of it with false heads, part of it with stove-pipe centers and the rest good fruit, that stuff cannot be marketed co-operatively because the person who is selling that stuff has no basis on which he can sell the goods. First, then, instead of making a Bureau of Foods and Markets, as has been done there, we should begin up the State with the grading of your fruit. Now it has gotten to be the habit in Pennsylvania, as in New York and New Jersey, if there is anything wrong, run up to the Legislature and get a law passed. If there are too many bugs on your trees, get a law passed; if you need more men on the farms, get a law passed; if you haven't got enough men on your railroad, get a law passed; if everything—

A Member: If we have too many men on the railroad, what then?

MR. STEVENS: Well, the effort is, in that event, to get it repealed, but we can't do it always, brother, justice does not always come. Friends, I question that if we had, in the State of Pennsylvania, an association which was binding, which took in every grower of first class fruit within the State of Pennsylvania, and they had their officers and got together and made rules and regulations regarding the packing of the fruit, the packages of those members to be stenciled and stamped, those rules and regulations, backed by the dealers, would have more force than any law that could be put upon the statutes of this State; isn't that so, Brother Surface?

PROF. SURFACE: Sure.

MR. STEVENS: Now, then, if you do that, you will have an association which can make better rules and regulations than any legislation can make by its laws because you are handling it yourself and you cannot always get what you want in the Legislature, any more than we can. I have found that out, so this is the thought I wanted to leave, to sum it up, and I don't want to take any more of your valuable time in that matter of marketing—I want to urge this body and the Horticultural Society, if you want some laws temporarily, all right, go to it, but in the end, you try to control this thing by rules and regulations of a co-operative body of horticulturists in this State, so that their rules and regulations will fix the marketing of the fruit of this State, then you will win and win more effectively than you will with legislation.

The CHAIRMAN: We will now have the report of the Committee on Credentials.

Mr. Fenstermacher then submitted the following report:

REPORT OF THE COMMITTEE ON CREDENTIALS

We, the Committee on Credentials, beg leave to submit the following report:

We have examined the credentials of the following:

County.	Name.	Post-Office.
Fayette,	John T. Smith,	Dunbar.
Fulton,	Frank Ranck,	Hancock, Md.
Lackawanna,	Horace Seamans,	Factoryville.
Lebanon,	Edward Shuey,	Annville, R. D. No. 2.
Mifflin,	C. M. Smith,	Lewistown.
Wyoming,	Geo. A. Benson,	Tunkhannock.

We found the certificates of the above in regular form, but with no seal of the organization having elected them.

The following were in regular order:

County.	Name.	Post-Office.
Berks,	H. G. McGowan,	Geigers Mills.
Bradford,	Louis Piollet,	Wysox.
Cambria,	L. J. Bearer,	Hastings, R. D.
Clarion,	J. H. Wilson,	Clarion.
Clearfield,	T. L. Way,	Curwensville.
Columbia,	A. C. Creasy,	Bloomsburg, R. D.
Elk,	John G. Schmidt,	St. Marys.
Erie,	D. Warren DeRosay,	Corry.
Indiana,	S. C. George,	West Lebanon.
Jefferson,	Peter B. Cowan,	Brookville.
Lawrence,	Doris L. Fulkman,	New Wilmington.
Lycoming,	B. F. Kahler,	Hughesville.
McKean,	E. A. Studholme,	Smethport.
Monroe,	F. S. Brong,	Saylorsburg.
Montour,	J. Miles Derr,	Milton, R. D.
Northumberland,	Wm. A. Fisher,	Milton.
Perry,	Clark M. Bower,	Blain.
Philadelphia,	David Rust, Hort. Hall,	Philadelphia.
Schuylkill,	John Shoener,	Orwigsburg.
Susquehanna,	E. E. Tower,	Hallstead.
Venango,	Homer C. Crawford,	Cooperstown.
Westmoreland,	W. F. Holtzer,	Greensburg.

B. F. Kahler, of Lycoming county, was elected to fill the unexpired term of A. J. Kahler, who resigned on account of ill health. His term will expire in 1918.

Homer C. Crawford, of Venango county, was elected for the term of one year. His term, therefore, will expire in 1917.

The Chester Co. Agricultural Association sent credentials electing Norris G. Temple as their member, but owing to the fact that no vacancy occurs the same could not be acted upon at this meeting.

The following delegates have been elected, whom your Committee would recommend to be seated and have the privilege of the floor.

Cyrus T. Fox, K. W. Robinson, J. S. Kepner, J. S. McLaughlin, Clark G. Long, S. D. Bashore, M. D., Samuel Imboden, John Hershey, Joseph Wolgemuth, John L. Shirk, John F. Brubaker, and S. P. Heilman, M. D.

P. S. FENSTERMACHER,
B. F. WAMBOLD,
G. F. BARNES,
Committee.

MR. FENSTERMACHER: In reference to the delegates whose credentials bore no seal but were otherwise regular,—what disposition are you going to make of them?

MR. SEAMANS: If it will please the Chairman and the State Board of Agriculture, I would say for Lackawanna county, that we have no seal.

MR. HUTCHISON: Are these in due form?

MR. FENSTERMACHER: Regular with the exception of being minus the seal.

MR. HUTCHISON: I move that they be accepted and the Secretary requested to secure a seal.

The motion was seconded and adopted.

MR. SCHULTZ: What would you do in a case where we had no seal?

MR. HUTCHISON: You can buy one down here very cheaply.

The CHAIRMAN: I think that matter is settled.

MR. FENSTERMACHER: It is deemed proper to have a seal; every chartered organization has a seal or ought to have one, if they are worth existing.

MR. SEAMANS: Lackawanna county had a seal but lost it.

The CHAIRMAN: Gentlemen, you have heard the report; what is your pleasure? Can the Committee tell us whom these delegates represent, whom you have recommended in the last paragraph of the report, to be seated?

MR. FENSTERMACHER: Prof. Fox represents the Horticultural Society of Berks County and the rest are all representatives of the Lebanon County Association.

On motion, the report of the Committee on Credentials was accepted.

MR. HUTCHISON: I move that the Hon. W. F. Hill and J. K. Runk, as delegates from Huntingdon County Agricultural Society, be admitted to the meeting.

The motion was seconded and adopted.

MR. FOX: My name has been mentioned. I am here as a representative of the State Horticultural Association, and I would say that 39 years ago, when the State Board of Agriculture was organized, I was one of those present. There were sixteen present at that time: The counties of Berks, Lancaster, Lebanon, Dauphin, Cumberland, Chester, Bucks and Lehigh were represented, along with the Governor of the State of Pennsylvania, Gen. John F. Hartranft, the Superintendent of Public Instruction, Hon. John James Wickersham, John MacDowell, of the State Agricultural Society and others. Thomas J. Edge, of Chester county, was elected Secretary by nine votes. Your humble servant had five votes and Mr. Nice, of Montgomery county, had two votes. I am glad to be able to be with this honorable body today, as one of the few survivors of 39 years ago, still active in the cause of agriculture and horticulture in Pennsylvania. In 1870, 46 years ago, I joined the State Horticultural Association of Pennsylvania. For 27 years I was Secretary of the County Agricultural Society of Berks county. I was the first Pomologist of this Board and I have been meeting with you a number of times in the past, and now at this late day I am happy to be with you again.

MR. HUTCHISON: I want to beg the gentleman's pardon; if I had known he was here I would have had him stand up this morning as a living witness. I move that Hon. W. T. Creasy, of Columbia county, Secretary of the National Dairyman's Association, be recognized as a delegate to this body and given the privilege of the floor.

The motion was seconded and adopted.

The CHAIRMAN: Are there any further recommendations? Gentlemen, I think we have worked pretty steadily this forenoon, and it is now a quarter to twelve, and this afternoon at 1.30 prompt—

MR. J. ALDUS HERR: Excuse me, Mr. Chairman; I would like to make an announcement. As soon as we adjourn I wish the members of the Committee on Resolutions would meet in the back part of the room. The members are Col. Woodward, Mr. Killam, Mr. Hutchison and Mr. Black.

The CHAIRMAN: Gentlemen; will you please come promptly at 1.30, as we want to correct the roll a little more, and the election of officers is the first thing on the program. We now stand adjourned until 1.30.

Wednesday, January 16, 1916, 1.30 P. M.

Vice-President Kerrick in the Chair.

The CHAIRMAN: The meeting will please come to order. The Secretary wishes to go over the roll again.

(Assistant Secretary Weld again called the roll).

The CHAIRMAN: Next is the election of officers, and we are ready to receive nominations for the three vice-presidents.

MR. J. ALDUS HERR: I want to place in nomination the gentleman who has been attending these meetings for quite a long while, who is an active member, who takes an active interest along farming lines in more ways than one, in fact more than a great many of us. I refer to Mr. Fenstermacher, a man who has been active in service ever since I have been a member of the Board, and perhaps for a good while longer. I nominate Mr. Fenstermacher for first Vice President.

Mr. Blyholder and Mr. Hutchison were next nominated.

MR. WELD: I would like to nominate a man from northwestern Pennsylvania; we don't often get a man there; I wish to nominate Mr. Studholme, of McKean county.

It was moved that the nominations close.

MR. HUTCHISON: In order that we won't have to go to a ballot, I ask the privilege of withdrawing my name and that will just leave the three brothers, and they can be elected by acclamation.

ASSISTANT SECRETARY WELD: Then the nominees are Mr. Fenstermacher, Mr. Blyholder and Mr. Studholme.

It was moved and carried that the Secretary cast the ballot of the Board for the foregoing nominees, there being no opposition. The ballot was duly cast and the result announced.

The CHAIRMAN: Mr. Fenstermacher, will you please come forward? Gentlemen of the Convention, in retiring from this office, I want to heartily thank you for your confidence reposed in me during my time with you on the Board. I have formed many friendly relations with the members during my term here. I have not asked the Board for a favor but what you have complied with my wishes. I asked you to come to our county a few years ago for your Round-up, and you complied with my request; I appreciate it very much indeed. You had the confidence to place me at the head of your Board as your Chairman, for which I want to thank you very kindly indeed. My time having expired as a member of the State Board, and our Agricultural Society, in Bradford county requesting that I should be their President, I withdrew as a candidate with the complete understanding with my successor, Mr. Piollet, whom you all know and whom we are all proud of in our county. I want to say at this time that I think Col. D. E. Piollet, Mr. Piollet's father, did more for agricultural work in the State of Pennsylvania than any man existing today. You know Brother Piollet's son, Louis Piolett who is the State elector of your Grange today. I am associated with him in the agricultural work at home, and we are proud of him as a young man, and all I ask of you gentlemen, is to give him the same kind of treatment you gave to me and I will appreciate it very much indeed. Mr. Piollet is an extensive farmer, having some six or eight hundred acres of land along the Lehigh Valley, and that is his occupation, tilling the soil. In my opinion, those are the kind of men that should be at the front of this organization, practical farmers. I have in my library a picture that I hold very dear—the members of this State Board, and I shall call you to my memory as I observe that in the future with a great deal of pleasure. Now gentlemen, without taking any further time, I want to thank you for your courtesy to me.

Vice President Fenstermacher in the Chair.

The CHAIRMAN: Members of the State Board: I want to thank you for this honor conferred upon me. If I had been aware it was going to come off, I would have prepared a speech. Under the circumstances, I will say just a few words to bring before some of the people, at least in contravention of the many people, hold that all a farmer should do is to raise more crops, more per acre so that the consumer can live cheaper—I, for my part, protest against that sentiment being spread abroad amongst the people of this State. Before I am going to make two blades of grass grow where one grew before, I want to know what I will get for that extra blade; I want to know where my market is. That sentiment seems to be going abroad by well meaning people—nothing personal in this—it is bewailed all over the State, particularly by these theorists that can plan out all these schemes in the way of a dream, balance up all these conditions. But we who are up against these things have got to face the knocks and make a living out of these things, we know that those theories, as a rule, don't hold out.

What I have in mind, what I refer to is these well meaning people, what I have in mind is this, the fault of agriculture, of the high cost of living or the cost of high living or whatever you call it, is not caused by underproduction, not by a long sight, it is caused by the faulty distribution of these products; it is too expensive, there are too many men in between. Take for instance the case in my town where peaches were selling at 30 to 40 cents a basket, 16 quart basket, and retailing in the same town at 10 cents a quart, the consumer paying 10 cents a quart or $1.60 a basket for a basket for which the retailer paid 40 cents. There is the trouble. How are we going to correct this? Not by having the producer grow more of it. Lots of stuff went to waste all over the State, peaches, apples, and truck in particular. Thousands and thousands of dollars' worth went to waste just because of this faulty distribution. Adaptability—adapting your location and your manner of rotation, of growing crops to your nearby markets or your distant markets, is a point we ought to speak of. I just bring up these points to show at least that some people know the situation. If there is anybody needs to be educated, it is the city man, he certainly needs to be educated how to buy, and a Press Bureau supported and run by the State Department of Agriculture, would do more good to everybody, just keep the people posted on the value of things, the cost of producing those things, and in what quantity and how to buy them, that would do more good than continually harping on this question of growing more of it.

You know how it is, you attempt to raise the price of milk one cent a quart, just one cent a quart—why, the city people will all take it up and call you a robber, a thief, a murderer of babies, and everything else, and yet it has been done and will be done again in other lines; the moving picture shows can double their price of admission, shoes are higher and everything is going up and nothing is said. Higher prices for these luxuries are all accepted, no farmers seem to grow those. Why is it? It simply shows that the consumer, the city man, needs education more than the farmer on these lines. It may be well to pass a resolution to bring out some of these points;

I just throw these thoughts out as a feeler; if you agree with me, you can bring up something of that kind through the Resolutions Committee and see what we can make out of it, see if we can make some impression somewhere to correct some of these false ideas.

Next on the program, I believe, is the election of an Executive Committee, nine members, the Secretary being a member ex-officio. I will be glad to receive nominations.

The following members were then nominated: Matthew Rodgers, Chairman, H. G. McGowan, W. F. Biddle, C. M. Bower, W. F. Throop, Dr. W. Frank Beck, J. Aldus Herr and B. F. Killam.

On motion of Mr. Kerrick, the nominations were then closed.

On motion of Mr. Joel A. Herr, the Assistant Secretary cast the ballot of the Board for the nominees and they were declared duly elected.

The CHAIRMAN: If you will allow a suggestion from the Chairman, I suggest that it would be well to meet immediately and get busy.

MR. HUTCHISON: I move that we now take up the question of where the Round-up meeting is to be held.

MR. KILLAM: I would not think a motion would be necessary, if there is no objection to it.

The CHAIRMAN: Well, the Chair is ready to receive nominations.

MR. H. G. McGOWAN: It affords me pleasure to extend a hearty and cordial welcome to hold the summer meeting at Reading, the capital city of Berks county. It is an old proverb "that coming events cast their shadows before," and I find that the members of the Board have all, I suppose, received a letter from the Chamber of Commerce of our city extending this invitation, and all I have to do is simply endorse that invitation, which I am glad to do.

Again, there has been a little booklet since the convening of our Board here placed in the hands of our members, which is only indicative of the hospitality of our people, a little pretzel book, and that which goes with the pretzel you will have to come to our City to enjoy. (Laughter) We have ample hotel accommodations and excellent railroad facilities. I really did not know that our county possessed so many points of interest until I opened this little pretzel book, and it would be foolish for me to take up your time to enumerate them. You can just refer to your pretzel book, which will be a safe guide for you when you come over to Berks county. We have mountain scenery, railroad scenery and lakes and breweries and I don't know what all, and one of the principal things we have there for your safety is a guaranteed fire-proof hotel, second to none, I believe, in the State of Pennsylvania. The Horticultural Association held their convention in this Hotel and was very well pleased. Without going over the ground any further, I will just repeat that I hope Reading will be selected as the place for holding our next Summer meeting.

MR. FOX: I desire to say a word more in behalf of the City of Reading. It is where my home is, where I have spent the years from my birth to this time with the exception, perhaps, of a few years that I lived in the South, still maintaining my residence and voting place in Reading, but there is no more beautiful place on the globe than the City of Reading. I was at a meeting some years ago of the National Editorial Association, and a delegate from Wisconsin, when his name was called and the name of his place, Oconomowoc, he said, "Please mention that again," and then they said "Oconomowoc," "Yes, that's the spot," and Reading is the spot. We have scenery there among the finest in this country, and if you come there at that pleasant summer time with our mountain railroad to take you over Mt. Penn and Mt. Neversink, you will find a people ready to greet you, ready to accompany you, ready to show you what we have. We will not say what the pretzel book tells you about nor what you will get to eat nor what you will get to drink there; that you will find out for yourselves. But in behalf of the Chamber of Commerce of the City of Reading, the Agricultural Society of Berks county and all our organizations there in the interest of progress, in the interest of the public, I second the invitation that you meet next Summer in the City of Reading.

MR. SCHULTZ: A couple of years ago I started a movement to bring this body to Norristown and a great many of you good friends promised to stand by me through thick and thin when the proper time would come, but I want to say this; I have made an investigation quite recently through our town and I find that our hotels are filled from garret to cellar with business people, a great many of our traveling men have to go to the City of Philadelphia to get accommodations over night, and under those conditions I do not think that I have a right, when we have a chance to go to Reading, that I have a right to ask you to come to Norristown, and I want to avail myself of this opportunity to release those friends from that promise and I ask them to give their support to the motion to go to Reading. I think that will be great. I was raised in Berks county and I have a right to talk for Reading too. I don't need to tell you that, you can hear that in my speech.

MR. GEORGE W. BARNES: Ithink as we have had the opportunity to visit the different sections of Pennsylvania; we have had some very warm receptions, referring both to weather conditions and the friends we met in those places, and also some cool ones, and especially the weather on the last occasion when we went to the northwestern part of the State last year. I, therefore, think it is about time that we bring this matter to a close and let Reading have this meeting with the unanimous vote, and that is my motion.

The motion was seconded and adopted.

The CHAIRMAN: I am not certain there is going to be a Spring meeting, but nevertheless put it to a vote. If there is no further special business, we will continue with the program, and next is the report of the Chemist, Dr. William Frear, of State College.

DR. FREAR: Mr. Chairman and Gentlemen: I am surprised, speaking of the advantages of Reading and what it has done and is

doing for the State, that they failed to mention that Reading gave you your present chemist. I am sure that if you appreciate Reading at the time you visit it as much as I did as a boy from no time till I was twelve years of age, you will find it a delightful place indeed. I only regret that I have not been able, of late years, to enjoy the hearty friendship and hospitality of its citizens as I did in my boyhood years.

I want to speak to you briefly this afternoon upon two topics, both relating to the fertilizer question and the fertilizer situation. I suppose we have never had such a lesson on the interdependence of the nations of the world as we are getting to-day.

Dr. Frear then presented the following report:

FERTILIZER CONDITIONS AND OUTLOOK: THE SYSTEM OF VALUATION.

By DR. WM. FREAR, *Chemist.*

The fertilizer situation in America is a beautiful example of the close commercial interdependence of the nations of the world. As soon as the European War began, export demand raised the prices of our grain crops, our draught animals and presently of our cotton. Then followed a heavy demand on our metal supplies, our automobiles, and then upon our chemical resources. Old factories were reopened and new factories of vast area were hastily built, and the land was literally scraped to create the raw material stocks from which the vast demand for finished chemical products, munitions and medicines, might be supplied.

At once, the merchant fleets of Germany were gathered into safe harbors at home and in neutral ports; and a large fraction of England's transportation facilities were diverted from mercantile uses to those of war transport. War risks increased insurance rates. Here we were not only cut off from Germany's great system of chemical works, but with the prices of chemicals in neutral countries increased and our means of transporting them made scarce and expensive.

We had been inclined to boast of our own natural resources, and in the habit of thinking that they would, in time of need, make us absolutely independent of all outside supplies. Now we find that natural resources, however abundant and varied, serve no useful purpose until developed. All the gold in Solomon's mines never paid a store-bill, so long as it remained in the mine. In these days, large natural resources cannot be developed or utilized until capital can be enlisted, secured by proper legislation and assurance of suitable national economic policies, and until our technical experts shall have devised suitable systems of production. These preparations take time. The war found us unprepared for its exigencies just as truly as if a hostile fleet had appeared to land an army of 500,000 foemen upon our shores.

England established her so-called blockade of German ports, and Germany put an embargo on potash export—partly to protect her own food supply, partly to embarrass crop production in enemies' countries and doubtless to cut off the supply from which potassium chlorate and related explosives might be made for the use of the enemy. Muriate of potash, worth $38. to $40., on our markets in August, 1914, by January 1915, had jumped to $60.; by March, to $114. by June, to $225; by November to $260.; and a month later, to $245; and now are announced small lot sales at $375. to $600. a ton. Our munition makers have far outbid ourselves and the fertilizer makers who work for us, and have gone out in the neutral world, as far as Java, to gather in the available small stocks of potash salts. All the other potash salts followed the muriate in disappearance from the market and in elevation of price, although their price levels did not reach that of the muriate.

Meanwhile there has been much talk about the great stocks of potash in our feldspar and other potash silicates and, here and there, somebody has gone to the expense of grinding fine some of these rocks, a process that makes them little more valuable as potash foods for plants than so much sea sand. Our geologists have bored the West for saline potash deposits, without finding anything of much economic promise. Several heavily capitalized concerns have begun to work Utah alunite deposits for both potash and alumina, without any promise of a protective tariff for potash, after the war, and without a certain market for their alumina output. The coastal waters of California bear great crops of giant kelp rich enough in potash to equal in number production our usual potash imports; but California legislation offers little protection to capital that might be gathered to utilize the marine products within California territory. So our potash production has been limited to a little dried kelp and saline kelp extract made by several small concerns, a carload or two of potash derived from alunite, and some that has been extracted by washing the flue dust of cement factories.

How about our phosphoric acid and nitrogen supplies? We have abundance of phosphate rock, but war conditions caused unsettled mine operations. Stocks are low, but prices have held at about $3.62½ a ton for South Carolina kiln-dried rock, and at $5. to $6.50 for Tennessee, 80% rock. We use most of our phosphorus in the form, however, of acid phosphate. The price per unit of 20 pounds of available phosphoric acid held firm at 47.5 cents from January to September 1915, when it began to increase. In October last, it was 77.5 cents, and in December, 82.5 cents. Now, the wholesale price of 16% rock, held firm at about $14.00 a ton, and our retail prices will probably run from $18. to $20. for goods of this grade.

This price change in acid phosphate is due not to the raw phosphate, but to the sulphuric acid. We made more sulphuric acid in 1915 than ever before, but the demands of the munition makers outran the supplies and prices went up. Our surphuric acid makers have obtained their sulphur in small part from the brimstone of Sicily, and the deep sulphur deposits of Calcasieu, Louisiana, but chiefly from pyrites. Newfoundland, Virginia and Huelva, Spain, were our considerable sources of supply, especially Spain. Furnaces adapted to pyrites can not quickly be changed to burn sulphur. Spanish pyrites

found transport difficult and freight high. The prices of refined pyrites have advanced one-sixth; and of crude, nearly one-half. Hence 60 degrees sulphuric acid which was quoted last August at $.80 to $1.00 in bulk, now commands $2.00 to $2.50 and even to $4.50. America wastes from her smelters, furnaces and coke ovens vastly more sulphur than she converts into useful products. Slowly we are devising means to reduce this waste. In 1915, one-fifth of our sulphuric acid was recovered from smelter fumes. The 25% increase in production from this source has been too small to meet increased current demands. Basic slag phosphate came wholly from Europe. None is now imported.

As to nitrogen, we have depended chiefly on our own organic supplies, with additions of Chilean nitrate of soda, English sulphate of ammonia and a little American cyanamid. Most of our own nitrate imports went, before the war, into chemicals and explosives; about one-third into fertilizers. The war at first paralyzed, later stimulated the nitrate mining. Chilean prices rose. Then the Panama Canal was blocked, stocks accumulated in Chile and prices fell one-fifth, but ocean freight rose from $14. to $17. a ton, owing to the long carriage by way of the Straits. These several price factors led to the fluctuations in nitrate of soda wholesale prices in our markets. Jan.—May 1914, $2.22 cwt; June—Jan. 1915, $2.18-$1.90: Feb.—Aug., 1915, $2.05-$2.45; Sept. 1915, to date $2.50-$3.75.

The sulphate of ammonia is largely of English origin. Domestic resources are little utilized, and the domestic output is too small to determine the price situation. From a wholesale rate of $2.85-$3.00, the price has advanced to $4.00.

Our cyanamid manufacture is assuming respectable proportions, but the supplies are still to small, considerably, to affect the nitrogen situation.

Finally, as the natural result of conditions in other nitrogen staples, the demand for our organic ammoniates has risen relative to the supply, with a consequent rise in market price. High grade blood which sold, wholesale, at $2.75 a unit of ammonia in Jan. 1913; at $3.30 in Jan. 1914; fell to $2.95 in January of last year; and to $2.75 in early July; but has now risen above its old level, to $3.40. Concentrated tankage prices, have followed the dried blood variations, with price per unit differences of 15 to 20 cents for nitrogen and with a steady allowance of 10 cents a unit for bone phosphate of lime.

Our fertilizer makers have bought their stocks under these market conditions. It is stated, however, that Southern stocks have not been wholly completed, owing to the uncertainty as to the 1916 cotton acreage. If the acreage should be much decreased, present cotton stocks will suffice. If not, prices of ammoniates are expected to advance rapidly within the next few weeks.

The scarcity and high price of potash has forced difficult decisions upon the fertilizer maker. He has decided to conserve his stocks, to divide them among his customers at comparatively small advance over their original cost price, and to maintain as fully as possible his main lines of complete fertilizer. This means continued provision for crops relatively little in need of potash, but inadequately supply for those crops most in need. Still, many brands have had their potash content greatly reduced. In the Fall of 1914 official fertilizer samples,

of the complete type, there was 3.33% of potash on the average; in those collected in the Fall of 1915, 1.94%. The corresponding collections of rock-and-potash fertilizers contained 3.41 and 1.87 per cent. of potash, respectively. No dissolved bone phosphate was found in the 1914 Fall collection; this Fall, 32 such brands were collected and analyzed.

The relations of selling price to commercial valuations at rates fixed in the Spring of 1915, were, for the principal classes of fertilizers sold last Fall:

	Selling price	Valuation
Complete fertilizers,	$21.79	$23.13
Rock-and-potash,	16.89	15.75
Dissolved bone,	21.52	18.32
Dissolved rock,	13.83	13.41
Ground bone,	32.79	33.56

These figures speak for themselves.

The raw materials market open to home-mixers has been much contracted. The trade in mixed goods has always supplied reluctantly the materials for home mixing, though the potash and nitrate propaganda have encouraged it. Still, ready cash always has a commanding voice, and home-mixers paid cash; while sales of ready mixed goods through middlemen, were on long credit basis. There is an agitation in trade circles for placing all fertilizer sales on a short-time credit basis, and it is urged that farmers are now so well supplied with cash that the present is an opportune time for the credit readjustment. Those behind this agitation say that, with such adjustment accomplished, the cash proffer of the home-mixer will be less attractive.

With potash scarce and fertilizer prices high, what is the farmer to do? Let him keep a clear head, in the first place. His products sell readily at a high price, and the fertilizer is a minor element of crop cost. He has heretofore bought with more thought of spending little for fertilizer, than of getting for his dollar the most he can secure of what his crops actually need. He has not been most careful of domestic fertilizer supplies, though more careful than he was a few years ago. He has been tempted to consider potash and nitrogen applications more important than the crops said they were, as compared with available phosphoric acid. He has often fed his quickly grown, intensively worked crops of high price, little more than he gave to his long-period machine-works grains and hay. In the present emergency, he may have to do without much potash, but, as Dr. Jenkins of the Connecticut Station pithily says—"he should do more *with* it." In addressing you last year, I discussed the principal methods by which the farmer may meet the potash shortage. I have little to add to what I then said, and will not take your time to rediscuss the subject.

FERTILIZER VALUATIONS

When, 27 years ago, I was first charged with the care of the official fertilizer analyses, I was required to attach to the analyses certain approximate valuations of the respective samples, and this requirement has continued. A like requirement exists in most other fertil-

izer controls of the Eastern and Middle states, though New York has long abandoned the practice.

Doubtless, the reason for the requirement has been the supposed simplicity of comparison it affords to the buyer, who, at the outstart and too often even yet, has little clear appreciation of the meaning of the analyses with which the valuations are associated.

It may be a surprise, therefore, when I tell you that I know of no fertilizer control officer charged with the responsibility for making the valuations, who does not regard the policy as unfortunate for the fertilizer buyer, and who would not gladly be relieved of the requirement that he make such valuations.

The reasons for this attitude are these, in part:

(1) The buyer too commonly regards the valuation to be based strictly upon the analysis. It is not so based. It states only the cost of the same weights as appear in the goods, of fertilizer constituents bought in high-grade materials at average market prices; whereas the fertilizer may have been made of cheaper, low-grade materials.

The Chemist soon reaches the limit beyond which present methods afford no clue to the nature of the raw materials used.

(2) The buyer ought to consider his crops needs first, and then try to supply their fertilizer requirements as economically—I don't say "as cheaply"—as he can. The valuation system tends to make the buyer look to see that the selling price is not above the valuation and, if satisfied as to this, to buy without making sure that the fertilizer is what his crops want. The result is as though, having secured your wife's promise to bake you a cake upon your own promise to buy the lacking raw materials, you were to visit the store, and and finding flour worth much less a pound than sugar and butter, were to carry back to your wife only the flour, while she had neither sugar nor butter; or, if in other cases, you having bought some of each cake ingredient known to you, at an average low price, your wife were to say she already had at home plenty of sugar and butter, but that you hadn't bought enough flour. How much cake could you expect? As the fertilizer control official has considered the great degree to which the commercial valuations are mis-applied, he has reached the conclusion that a current review of fertilizer conditions without the attaching of valuations to individual analyses, would promote intelligent fertilizer buying; but that the present system of an assumed valuation acompanying each analysis, retards the development of intelligent buying. The subject is one deserving your careful consideration.

The CHAIRMAN: We are considerable behind time according to the schedule of the program here; but this is a very important question, a vital question, and we will allow some time for discussion. I don't hear any. The report will be received and included as a part of the proceedings. Next, is the report of the Veterinarian, Dr. C. J. Marshall.

Dr. Marshall presented the following report:

REPORT OF VETERINARIAN

By DR. C. J. MARSHALL

Mr. Chairman and Members of the State Board of Agriculture: A year ago when our meeting was convened, we were in the midst of a bad rumpus on account of foot-and-mouth disease in the State. Since that time the work has been cleaned up satisfactorily in Pennsylvania. If nothing more happens, I think it would be well for us to consider today of things that were done during the last outbreak, or might have been done, to make matters better, and I think it would be a good plan for us to review a little what has happened and see if we are not prepared to handle another situation of that kind with better results than this last one.

I did not prepare a paper on the subject; I just want to consult with you and see if you know of things that were done that should not have been done or if we could have done the work any better than we have. You may think in my making the statement to you that I have in mind, that I am inclined to brag about what happened, but that is not the purpose. I want to tell you just what happened as near as I can in the fifteen minutes allowed to me, and see if you have any suggestions to make that will improve matters.

Now, a year ago, the nineteenth of October, 1914, the acting chief of the Bureau of Animal Industry called our office on the phone and told us that foot and mouth disease had been diagnosed in the southern part of Michigan, that they had two counties in the southern part of Michigan in quarantine and two in the northern part of Minnesota and that the quarantine was sufficiently broad to cover all the danger at that time. That struck the men connected with the Board much harder than probably it would have struck you if you had heard the same message. We realized the importance of foot-and-mouth disease in this country and got busy at once. Within two hours we had a letter run off on the mimeograph and mailed to over 1,800 veterinarians in Pennsylvania and all commission men and cattle men as far as we had a list of those people. We had that letter in the mail in less than two hours, warning them of the danger of the disease, stating where it was located and telling them to be on the lookout for it and to telegraph or call us on the long distance telephone if anything suspicious developed in their territory.

Fortunately in the nineteen hundred and eight outbreak, which occurred six years before, Dr. Pearson was then State Veterinarian, and after the outbreak was over he wrote a careful description of what had happened in that outbreak, just how the work was managed, all the precautions taken, etc., and a more complete description of what happened in that outbreak I doubt if it is possible to write up. As soon as we had our letter out of the way, we began to review our literature and see what was recommended to be done and read over the regulations and symptoms of the disease and try to get ourselves ready as fast as possible, if anything did happen. We notified our agents in Pittsburgh and had a good corps of train men in the Pittsburgh office and the Lancaster office to watch carefully for any ship-

ments from the West that came through those points for symptoms of foot-and-mouth disease, and men were put on their guard watching every shipment that came through.

Another thing we did, we sent a good man to Chicago to see if there was possibly any danger there. He went out about the 24th of October and he looked the situation over there to keep track of what was going on and see if there was any danger of infection getting into the Chicago stockyards, and reported no suspicious cases in Pennsylvania until the 29th of October; that was ten days after we got the notice, then we had a true case of foot-and-mouth disease in the Pittsburgh yards and three herds affected in Lancaster county, but none of thos animals had gone through the yards with the disease, they had gone to the farms and developed the disease there. We looked over 1,350 cattle in the Lancaster yards and did not find a symptom of disease, three days after the examination was made, but we found the disease on the farm.

That outbreak turned out to be the worst calamity we ever had in the way of contagious diseases among animals in America, and I brought you this outline to show you something about the statistics of the disease in the country. I presume you are familiar with it, but I just want to call your attention to the way the thing was distributed. This gives you the number of states in which the disease occurred, the number of counties in each state and the number infected. You will notice that in Illinois they had 102 counties in the state, of which 52 were infected; number of herds infected, 768; number of premises infected, 709; in Pennsylvania we have 67 counties, of which 34 were infected; number of herds infected, 858; number of premises infected, 795. I will not read over the whole chart, but Illinois was one of the worst infected states in the Union. More than half the animals that were killed were in the State of Illinois. The number of cattle slaughtered was 24,338; number of swine slaughtered, 33,434; number of sheep slaughtered, 1,248; number of goats slaughtered, 22; total number of animals slaughtered, 59,024, in Illinois on account of this disease.

The first infection they found on November 1, two days after we found it in the Pittsburgh yards, and the last case they had till this report was made was April 23, but since that they had a second outbreak and that has added a good many animals to the total reported here.

It is estimated that it cost the State of Illinois $200,000 to clean up this second outbreak, and just last Saturday they had another little outbreak in the central part of the State. They found the disease on one farm there; a suspicious lot of hogs were received in the National stockyards at East St. Louis, Illinois; the Federal Government sent men back to that section to look over the animals in that community and see if the disease existed there; they were not quite sure on this shipment that came into East St. Louis, but they sent their men back to the neighborhood from which the hogs came and they located one definite herd there that was positively infected with the disease, and 16 head of cattle and 24 hogs in that herd. They had one other farm in the neighborhood that was suspicious. The Government immediately quarantined that county, and they do not know from what source that infection came. That is a disagreeable

feature of the thing; if we knew where the infection came from, we would be more contented about it, but previous to that, the last disease they had in Illinois was the 25th of December, in Lake county, Illinois. That was not very far from the Durand herd where there was so much excitement before they could destroy it.

The second outbreak has cost the State of Illinois, or will cost them, $200,000 to clean up, and it came from infected hog cholera serum made the last of October, and from some hogs that came from the southern part of Michigan, and it was not known at the time that they had the disease, but it was found later that that serum contained the disease and started up a new outbreak in eight different counties in Illinois and one county in Minnesota, and one outbreak in two other states. But we did not feel so uneasy about that one as this one at present, because we know where the infection came from, and in the case of this one we do not.

You might want to know what Pennsylvania is still doing to keep her herds free from the disease. The first infection we had in Pennsylvania was November 1, as the Government has it reported here, but it was the 29th of October. Our last case was the 29th of April. So far as we know, we have not had a case of foot and mouth disease in Pennsylvania since the 29th of last April.

Now we have been watching Illinois with a great deal af interest, and the situation there at the present time is this; we are not accepting shipments from Chicago or East St. Louis for any purpose except immediate slaughter, and then they must go into slaughter houses that have Federal inspection or some kind of inspection, or the owner of the slaughter house must give us a sworn statement that he will kill all the animals he receives inside of forty-eight hours. We allow them to unload animals for feed, rest and water at stockyards if they are willing to handle animals of that kind by themselves and will not let animals used for dairy purposes go through those places afterward. There is only one stockyard that is willing to handle those animals in that way and they have a permit for unloading them for food, rest and water in the Connellsville stockyards, but the Pittsburgh, Erie and Lancaster stockyards have decided that they won't bother with those interstate shipments. We have had this same kind of regulation in Chicago all the while up to the present time, but today we have added in the same category shipments from East St. Louis. I think we are perfectly safe; I do not believe there is any danger of the disease springing up in Pennsylvania again unless we bring it in. I think the time has already passed when we need not feel any uneasiness from infection lurking around in the State, but there is danger, if we are not very careful, of getting the disease from Illinois.

Now, I want to say something about what our Legislature did, and what the Board did, etc. In Illinois they have not yet paid the farmers the indemnity for the cattle destroyed, and that amounted to $1,600,000, and this last outbreak will add $200,000 to that. Governor Dunne called the Legislature together in special session to appropriate money to settle these claims of the farmers and the farmers are all on the job trying to do their part; the members of the Legislature representing the agricultural districts are on the job trying to get the necessary appropriations to settle up these claims, but for

some reason they do not get a quorum. Men not directly interested in agriculture are not attending the meetings and the farmers are pretty badly discouraged out there for the reason that they haven't gotten their money. Just last week the Congressman-at-large from Illinois introduced a bill in Washington to see if the Federal Government would not put up $1,800,000 to pay the indemnity for the State of Illinois. The Federal Government had paid its half, but Illinois wants the Federal Government to pay Illinois' share of it. I don't know where they will come out on that kind of proposition, but all the other states paid their bills and I expect Illinois will do it too, but it is a pretty big burden.

In our State it cost $625,000 to pay for our troubles, and so far as I know, all just claims have been paid. You have heard probably that in the 1908 outbreak some of the farmers did not get paid for their stock. As far as we know there is not a claim filed that has not been paid unless there is some hitch about the payment of that claim, and it is interesting to contrast the way Pennsylvania does business with the way they do it in some other states. When our Legislature was called to order in Harrisburg in 1915, about the first thing done was to put a bill in their for money to pay the indemnity for the cattle destroyed up to that time, and that appropriation was granted in full and the Governor signed it as quick as he could get hold of it. There was not a word against it in either the House or the Senate. They put the money up as generously as for any purpose you can imagine, and then later we had to ask for $125,000 more, the first amount was not enough, and that came just as cheerfully, and I don't know how you could ask our Governor or Legislature to have done any better than they did with the appropriation part of it. A good many members of the Legislature felt that it was not right that our law should limit us in the extent of appraisement that we should make on animals that were ordered to be killed for the good of the public. Under the old law we were limited to $40, on non-registered animals and $70. on registered cattle, and our law will not allow us to pay more than $10. for a sheep or more than $10. for a hog, and you know very well that is a pretty small payment for some of our good hogs, and the sheep men and hog men looked upon it as a joke. The Legislature felt that that limit on animals should be removed in a case like that of foot and mouth disease and that if the State is going to kill them by force or make the farmers kill their animals for the protection of the public that they should pay full value for them, and that bill was introduced and went through without a word against it and was signed promptly by the Governor, so if we have trouble in the future with foot and mouth disease—and I hope we wont—if we come to appraising animals, they will be appraised at their full value and the State will pay whatever it agrees to pay. The State did not set aside a certain sum of money to pay indemnities; if we get into new trouble—fortunately the last outbreak occurred just as the Legislature convened and we could get our money promptly, but if that had occurred a year later, the farmers would have had to wait a year until the Legislature convened and that would have put the farmers in very bad financial condition. Some states have set aside a certain sum of money to meet these emergencies; Pennsylvania did not do so, but I feel that we will have very

little trouble in the future in convincing our people that if the state makes a promise that it will try to pay for calamities of that kind, it will make good, because it has settled fully for two out-breaks now and I think people generally have a good bit of confidence in what the State will do.

I don't know that there is anything more to say about foot-an-mouth disease just at present. There are a great many things that could be said about it; there are some other diseases that you are probably as much interested in now as foot and mouth disease—something in reference to tuberculosis. It was necessary for us to use up so much of our money on foot-and-mouth disease, $625,000— that we had to change our plan a little in handling tuberculosis. Up to last July, we always arranged to pay some indemnity for cattle that were condemned for tuberculosis. They were appraised under the same plan as we appraise in foot-and-mouth disease, and we could pay $40. for a non-registered animal or $70. for a registered animal, and we could pay them that indemnity, but on account of the money we used up for foot- and- mouth disease and our not being able to get any more from the Legislature, we had to cut out the indemnity for cattle out of this appropriation. Some of you may think that is an injustice and I am rather surprised myself to find that so many of our farmers are keeping on with the tuberculin test although they get nothing for the animal destroyed except what they get after slaughtering from the butcher, for the offal, hide, etc.

In reference to contagious abortion—that is not a reportable disease; the Board is not compelled by law to handle contagious abortion, but from the letters received from our people in the State, there is no disease that the breeders are so much interested in as they are in abortion. Now we have been trying to do a little work in it, but I do not blame you if you think it has amounted to nothing; in fact we have a pretty hard proposition there in knowing what to recommend in reference to abortion and sterility in dairy cattle, and we do not have very much trouble with that subject in other species of animals, but in nearly every mail we have a few letters from somebody who wants to know what is to be done for abortion and sterility, and we have been recommending them to isolate their animals and use local douches, etc. of antiseptics, and I do not know whether much has been accomplished in that line or not. I doubt if it pays a man to bother with it. As far as I can see at present, I think there is hope of doing something in pure bred herds, where they want to raise calves, especially. I believe that there is something that can be done, but it is nothing that you can do yourselves yet and I doubt if it will be anything you can do for a good while in the future. I do know of men that can do something for that kind of condition, and at the present time the Board is trying to make an effort to have some men trained to go out on cases of that kind and do something for the herd owners at the expense of the state, to demonstrate that it is possible to accomplish something. At the present time a herd owner does not feel justified in paying for services when he don't believe there is going to be any results obtained from it, and I do not recommend you to do it until we can demonstrate to you that it can be done properly. I will be glad then if you will be interested in it,

but as far as native herds are concerned, I doubt if it is worth bothering with; take your chances and put up with it as you have done in the past.

Hog cholera has not been so bad as in other years. I think the restrictions we had on the foot-and -mouth disease, disinfecting cars, cleaning up the shipping station and preventing shipments, to some extent, from other states, had a very good influence on hog cholera. We are still using the serum treatment and the quarantine in handling the disease, and where the disease is reported promptly, I think we have very good results. I think in any herd of hogs if the owner watches the herd carefully and reports the disease promptly and has it attended to with vaccination, I think there is very little excuse for a man losing very much from hog cholera. The trouble comes by not recognizing the disease soon enough and by delaying the treatment too long. There will be some losses the best you can manage, but if you are prompt in reporting the disease, if you treat it promptly, your losses will not be very heavy. I don't know that there is anything else unless you want to ask some questions about the work. I feel that it is the purpose of all the departments of the State to take citizens into their confidence more in reference to doing work in the future. We do the work the best we can, we do not pretend to know it all, we are ready for suggestions at any time, and if any of you know how work can be done better and how better results can be obtained, we are glad to receive suggestions at any time, either by letter or in meetings of this kind, and if any of you have any questions to ask, I will be glad to answer them if I can. If not, I wish to thank you for your attention.

The CHAIRMAN: Is there any discussion of this report? If not, if there is no objection, the report will be received and included in the proceedings.

MR. MATTHEW RODGERS: The Executive Committee are now ready to report.

The Executive Committee then presented the following report of appointments for the coming year: (See page 5).

On motion of Mr. Killam, the report was received and adopted and placed on file.

The CHAIRMAN: The next report on our program is that of the Committee on Dairy and Dairy Products, Mr. B. Frank Wambold, Chairman.

Mr. Wambold then submitted the following report:

REPORT OF COMMITTEE ON DAIRY AND DAIRY PRODUCTS

By B. F. WAMBOLD, *Sellersville*

American livestock producers rarely, if ever, encountered more adversities in one single year than they experienced in the year 1915 just past. In the face of all misfortunes, including foot and mouth disease, together with the unsettled conditions of commerce result-

ing from the European war, still there have been evidences of the betterment of the dairyman's condition. The Cow Testing Association, co-operative buying and marketing, especially was the improvement noticed in the co-operative creamery interests which furnished the dairyman the full value of his product.

The Cow Testing Association has opened the eyes of many a dairyman and gave him a firmer foundation. When one is approached and asked to identify with himself the organization, seemingly realizing his financial ability to unite, he is very apt to suggest the name or names of his more prosperous neighbor or neighbors, whose interest might be enlisted. The Association is designed to furnish information which is worth gold to the dairyman. The poorer his herd and weaker his finances the more eager should he be to ascertain the leakage in his business and seek the information to aid him in determining which one cow or more should become the basis of his future and more profitable dairy. Many a dairyman has told me that his cow produced a bucket of milk a day—never once making mention of the size, whether an 8, 10 or 12 quart bucket. Accuracy in figures alone makes the calculation worthy of note or notice. If he could definitely state that his cow produces 30, 40 or 50 lbs. daily, how much more satisfactory? And, if at the end of the year he could supply a complete record of production of 3,000 or 8,000 lbs. with a 3½ or 4% test, what an advantage and satisfaction indeed.

This can be readily done and with a small outlay. A milk scale, a sheet-paper and a Babcock tester together with a few spare moments of his time would be the equipment. He will, however, tell you that he has no time but he could well afford to take the time if he would eliminate the unprofitable and thus become the gainer financially. True, indeed, it is that many obstacles confront the dairyman which may more readily be overcome in other lines of business.

The luring wages and comforts of the city and at this time the munition plants entice away the farmer's boy from the farm to take a hand in the manufacture of shot and shell to kill the soldier of other countries while the poor babies in foreign lands are crying aloud for milk to satisfy their hungry stomachs and the farmers' sons in our country are maimed or possibly killed in the twinkling of an eye. All this has a tendency to decrease production, for there is no line of employment which calls for more competent and efficient labor.

The dairyman must ever be wide awake and on his guard for 365 days in the year if he would succeed. The *Cow* is at times termed a *Machine,* which name, in my humble judgment and estimation, is false and wrong, giving an entirely erroneous conception of the animal which I personally hold in higher esteem and regard.

No other animal is more ready and willing to respond to kindly treatment than the *Cow* and will show returns for same in dollars and cents in her product. Have you ever, as a dairyman, tried to remove the dust from her back with the milkstool in angry passion before milking? If so, use the scale afterwards and this first operation will convince you that it was a costly one. On the other hand use the curry comb and brush and then the scale to note the profit ac-

cruing from this operation. Remember that the cow has life and her sensitive nerves readily contract and relax which is not the case with the nerveless machine.

If the cow throughout her lifetime from birth to the gambol were treated according to her real needs and wants, we certainly would have more profitable dairies and better diarymen, better farmers and farms, and larger crops too. Here is the secret to meet the appealing argument of the fertilizer agent when you can produce as evidence her profitable by-product—the indispensable *manure*. I might at length refer to other important matters in the dairy and to the dairyman, viz, sanitation, equipment and disposal of the dairy product. These are very frequently neglected or overlooked by the dairyman as well as the State and all this tends to decrease the consumption of the dairy product.

"The High Cost of Living" is the cry to-day. Place the dairy product side by side with other necessaries of life—tabulate and note results. The public press and medical fraternity have laid the cause at the feet of the cow and her products in case of epidemics. In my home town an epidemic of typhoid broke out last year, and 'milk infection' was the immediate outcry, but no one made mention of the filthy alleys containing garbage which is ever the sweet prey of the dangerous *Fly*. The sewage disposal plant, often discharging its filth into the near-by stream, went unnoticed. The State should see to proper inspection and resort to rigid measures to compel the dairymen to produce a clean article, for he must often compete with the one who does not always live up to the requirements of the law.

I made an effort to secure statistics from both the State and Federal Departments for the year just closed, but was unable to gather any, hence the Committee is obliged to report without the usual statistics, ordinarily so valuable.

Let us hope, by way of conclusion, that the Committee did not fail to impress upon this body the great importance of the dairy industry and its products so as to build up our soil condition and the health of the nation, realizing fully that the dairy product furnishes the nourishment of mankind from the cradle to the grave.

The CHAIRMAN: Is there any discussion on this report?

MR. DeWITT: Tioga county has more creameries and more money invested in creameries, I think, than any other county in the State. What I may say I do not wish people to think is a thing that particularly belongs to Tioga county; but I wish to say it to warn you fellows who have some little private institutions of your own and some creameries, some skim milk stations and some cheese factories of your own, not to be too free to give them up to large corporations who will seek to destroy your little plants and build up a plant of their own and then you are at their mercy. Such is the situation that confronts the dairymen of our county today. Gentlemen, there was a time when we had, all over that county, small institutions like that I have been telling you about. We had small creameries run by the farmers who had consolidated themselves, a few of them, to make their own butter; cheese factories which had consolidated in the same way—a few of the farmers had come together and built some cheese factories and made their own cheese. Just recently there was dis-

satisfaction, and not only recently, but this thing has been going on for sometime. About 15 years ago some corporations crept in there and set up a skimming station, a butter factory, a powdered milk factory, two or three milk condenseries, and some of the patrons of those are not just satisfied with the treatment they have been receiving. They held a meeting just the other day in one of the localities where I live, and in fact the milk from any farm goes to one of these corporations, and they wished to have a talk, as the farmers, I think, were entitled to have a talk with those people who were running this factory or condensery. They did not appear upon the scene, but told them "If you are not satisfied with our usages go somewhere else."

It reminds me of the fellow that died. He went to the good place and he looked the books over and did not find himself recorded there; finally he went down to the other place and they didn't find his name recorded there and told him to go. He asked, "Where will I go?" They said, "I don't care where you go, you ought to go back where you came from." Now here is what I wish to tell you men who are interested in the dairy business, that they had our little creamery, they had our little skimming station and they had our cheese factory all destroyed; we have nothing; we are just simply at their mercy, and now the question that arises is to get those men together again and try to get them together so that we can get our milk into another channel of being manufactured.

I say this to you fellows who are dairymen. Some of you care nothing about it because you are not dairymen, but I want to say to you right now that those fellows in the western end of the State and in the western end of Tioga county feel very much hurt and one of the biggest condenseries in the world is that doing business at the county seat or near Wellsboro, and the other day the proprietors of the institution made the price to them for the year with a 5% reduction. There is nothing that you know of or I know of to warrant that reduction at this particular time, but their little factories were all gone and they simply had them at their mercy.

One young man told me the other day—to show you furthermore how sometimes these things are run—that he patronized the station, this factory, and he has been at the State College and understands the testing of milk as well as their man who does the testing for them. He took his milk to the factory and when they took out the sample for a test, he had them to take out a sample for him to test, also; there could absolutely be no mistake, and when the test was given him by the factory and he compared his test with it, they differed some 6 points. He went back to them and told them "I know that I am absolutely right; I am perfectly willing that you should take a sample of the milk, if you are not satisfied, and send it to the State College or any other place, and I am perfectly willing to abide by the decision of anybody who is competent to make this test." They simply said "If you are not satisfied with our test, go somewhere else; we are doing business here; neither the State College nor anybody else is doing it for us." Now, gentlemen, what I have said, I have said particularly for you people who may be thinking of giving all you have got in the dairy line into the hands of some other person to control; don't you do it.

MR. HUTCHISON: Mr. Chairman, we have with us today a very distinguished farmer from Lebanon county. He has been sitting over here listening very attentively and I know you people will be delighted to hear him, the Hon. Henry Houck, the Sunshine of Pennsylvania.

MR. HOUCK: I am just going to answer that invitation by saying that I am here and am very much interested; but I am obliged to leave on the train in a very short time, and besides, I do not want to interrupt this very interesting discussion that you have just had. Please excuse me at this time; I am obliged to Brother Hutchison. I fixed this up before I came in, to be called on, and am much obliged.

(There were calls for Dr. Sparks.)

ADDRESS OF DR. SPARKS

I can only say that I am sure everyone interested in agriculture is interested in getting the most out of the State's money which is appropriated for the various lines of agriculture. I know that you are all interested in the present interest which is taken by the Governor of the Commonwealth and the Secretary of Agriculture and those who are charged with the administration of the School of Agriculture at Pennsylvania State College, to so harmonize these factors of the State Government that the money which is expended shall bring the largest returns. No one of us would voluntarily keep two teams to do the work on the farm which one team could do, and we all realize the necessity of making a proper adjustment between the work to be carried on by the School of Agriculture at the College and the work to be carried on by the Department of Agriculture at Harrisburg. That is the task the Governor and Secretary have set themselves to do, to divide the line, as I understand it, by an arbitrary division which shall say that such work as you have had more this morning, with Dr. Marshall this afternoon, and others for proper protection for the people, the protection of stock and the protection of the materials you buy from adulteration—all that is the great work which the Department of Agriculture has to do, and that the work of instruction, of ascertaining information through the experiment station, of carrying that information to the people, better methods, more economical ways of doing things on the farm—that that belongs to the College; and they are trying to differentiate and divide the work in precisely that way, so that the people will get the largest return for the expenditure of their money. That is the thing we are all interested in, and that is the great work we are trying to do at the present time, and I know that no one more highly appreciates this and is more deeply interested than the State Board of Agriculture itself. And I want to say that we are trying, at the College, to carry on the work for the best interests of the people, trying to ascertain the facts through our various extension agencies made possible by this Smith-Lever Bill, we are able to carry that out in a way to give increased production and with increased production comes increased prosperity and with increased prosperity comes happiness for the people of the State. Thank you. (Applause).

The CHAIRMAN: I believe there is some difference of opinion as to how this should be disseminated, but time will not permit us to call anybody else to talk on this question now, and we will have the report of the Committee on Fertilizers, by F. S. Brong.

Mr. Brong then submitted the following report:

REPORT OF COMMITTEE ON COMMERCIAL FERTILIZERS.

By F. S. BRONG, *Chairman*

There is not another single item of expense for which the Pennsylvania farmer spends so much hard cash as for commercial fertilizer. This report is in the interest of that farmer. Let it be remembered that we are not talking about regular truck farmers or other highly specialized producers, though we believe in a general way these recommendations will also apply to them.

The first commercial fertilizer of which I have any recollection was crushed bone or bone meal, which was closely followed by acid phosphate and then by one after another of all the various combinations that high salaried officers in fertilizer factories could create. If we can take their word for it there are now nearly two thousand brands, each one better than the other, from which the farmer can take his choice.

Commercial fertilizers are designed to supply any one, or two, or all three of the plant food constituents generally conceded to be likely to be lacking in available form in ordinary soils, viz: nitrogen, phosphorus and potash. The nitrogen for the fertilizer may be derived either from a mineral, a vegetable or animal product. It may be in a form of immediate availability for plant use, or it may be slowly available, or it may be in such condition that scarcely five per cent. of it can be used by the plants in any one season. Again certain products carrying nitrogen are alkaline in their nature while others are neutral, and still others decidedly acid. In a somewhat less degree the same may be said of the materials from which phosphorus and potash are derived.

I believe that up to date we have missed the mark in our legislation for fertilizer control. We have taken it for granted that the matter of availability was all the farmer needed to know in regard to the fertilizer he spent his money for. Whether it was of mineral, animal or vegetable origin, whether it was acid, alkaline, or neutral in its chemical effect on the soil, these are thngs we have taken for granted the farmer need not know. Whatever we may have thought, or whatever fertilizer representatives may have been able to persuade legislatures to believe, the fact remains that these things are vital to the farmer.

Everything the farmer sells is regulated by law. When he sells a bushel of potatoes or apples he is required to give sixty or forty-five pounds, respectively, although it is scarcely possible ordinarily to heap this weight on a bushel measure. If he sells dairy products a close inquiry is made as to what he fed his cows, and as to the cut of

dress of the person who does the milking. If he sells wheat he may not deliver rye to the purchaser. But when it comes to purchasing that which may mean success or failure for his year's work the legislature turns the farmer over to the tender mercies of the fertilizer companies.

During the year 1915, fully 33,000 tons of fertilizers, in bags, were sold to the farmers of the State at a cost to them of $8,500,000, not more than $4,000,000 representing cost of material. The other $4,500,000 being composed in salaries to the officers of fertilizer companies, dividends, salesmen's commissions, mixing and bagging goods, office expenses, etc. The source of European potash having been almost entirely cut off from the result of preparedness on the other side of the pond, has resulted in one year in increasing the use of acid phosphate about 250 per cent. and raising the price of this American staple about 50 per cent.

About ten or twelve years ago before a local farmers' institute, the writer of this report made the statement that the ordinary grain farmer could not afford to depend on the nitrogen in commercial fertilizer to grow his crops. At the present prices of acidulated phosphorus and water soluble potash, I now unhesitatingly put these two elements in the same class. In other words, under present conditions the ordinary farmer cannot afford to use the product of the fertilizer trust.

To this general rule I would note a single exception. To increase production without the direct use of commercial fertilizers on a farm accustomed to their use is not an easy task. On ninety-nine out of every one hundred acres in Pennsylvania the first thing, and often the only one that is needed to bring up the crop producing ability is humus. To get the organic material out of which we make humus grow a succession of leguminous crops and work the full crops into the soil. To increase this growth it may be profitable under most conditions to apply some water soluble fertilizers.

When the soil is being filled with the various growths of legumes it is also being supplied with nitrogen. Nitrogen is the form that nature provided for plant growth from the beginning. In the breaking down of the organic structure of the plants in the soil the almost exhaustless store of potash is touched for all present needs. On many soils we believe the use of floats or finely ground Tennessee Phosphate Rock direct from the mine to the farm will pay in connection with the above treatment.

Availability. What sins have been committed in thy name! Instead of assisting nature to grow our crops in nature's way, we have depended on the factory made nostrums to feed our crops. The result is that we have so depleted the organic matter in our soils that if it does not rain for eight or ten days during the growing season we become panic stricken. With a little available plant food we have stimulated the soil to over exertion and the succeeding crops show the reaction. Availibility. To get it, fertilizer concerns will gather up any old thing with an acid to break down the organic structure, and then use it in complete fertilizers. In nature, the breaking down of the organic structure of plants or animal products in the soil results in bacterial action and is of very great importance in its

relation to plant growth. Even bone meal, animal tankage, and ground fish are now often aciduated to make them available. The fertilizer concerns do it for a price; but the farmer who uses these products should have his sanity inquired into.

It is my firm conviction that it is just as great an offence against morality to swindle a farmer as it is to goldbrick a mason. It is not my desire to ask special legislation for the farmers' uplift. He would resent that. All he looks for is simple, old fashioned justice. The fertilizer companies boast that they can and do use materials in their fertilizer against the laws of the State. I would have the legislature rewrite those laws. In addition to the present requirement of the per cent. of available nitrogen, phosphoric acid and potash printed on the bag, there should also appear the name of the material or materials from which the different elements have been derived. In the case of organic material the law should require the statement as to whether the organic structure remains or has been broken down by the use of acids or other chemical action. The condition of the contents of the bag as to acidity could be indicated by one of three words; Neutral, Acid or Alkaline.

If proper penalties are provided,—and it is absolutely essential that there should be,—for those who would defy the law, these requirements could be easily enforced by the Department. Then would the farmer know what he was putting into his soil and Pennsylvania agriculture would take a long step in advance.

The CHAIRMAN: Is there any discussion of this interesting report?

MR. J. ALDUS HERR: I would like to add a word to Brother Brong's talk on fertilizers or his report on fertilizers. I think that the sooner the average cereal farmer becomes aware of the fact that his soil is deficient in humus, the better for him. There isn't any one element that the average soil of Pennsylvania is so deficient as that of humus. I will prove the assertion by this little illustration: You tear down an ordinary line fence, if you please; remove that; you have added nothing to that soil with the exception of weeds probably if you mowed them they decayed there, and grasses have rotted and reverted back to the soil; you have added no lime, no commercial fertilizer of any kind. Put in any crop you wish, and I venture the assertion you will get good results. What have you done? You have done nothing but change the mechanical condition of that soil; you have changed the respective powers of that soil so that it holds water and moisture for use when the plant is ready to take it, and there isn't any one thing in eastern Pennsylvania so detrimental to growing crops as our pasture system, we pasture everything off of our ground and leave it bare, exposed to the bleaching sun, and the result is that it becomes lifeless.

I could show you an illustration in our neighborhood; only two miles from me a gentleman has 13 acres of ground on which he grows sweet corn. He has 30 or 40 acres grown by his neighbor; at the last cultivation of his corn he sows grass seed; one year he grows corn and the next year grass, grass and corn alternately, and every year he plows down the sod, and a more fertile piece of ground I have

never seen, and the nearer we can get crops in rotation that way, the less fertilizer we will need to purchase. I will venture that assertion.

MR. BOND: I had formed a resolution that I would not say a word at this meeting; but there is one thing I want to call to mind. For 25 years I have heard about the average farmer, what he can afford to do and what he cannot. I want somebody to explain what is the average farmer? 80% is the average farmer; they cannot afford to do something and cannot afford without doing it. I want to know what constitutes an average farmer.

The CHAIRMAN: The Bureau in charge of the Compensation Act has pretty well defined it's opinion who the average farmer is. The bill which recently passed exempting the farmers from the provisions of that act exempted agriculture, as I understood it; it would not have passed if it had not done so, but the commission or the Bureau in charge of that act, in carrying out its provisions, have made the average farmer a very minute creature; in fact, any man having an orchard to some extent is not a farmer; he will have to pay tribute to the insurance companies for his employees.

PROF. SURFACE: That includes also dairying and truck gardening and a number of other things that are branches of agriculture.

The CHAIRMAN: And the Compensation Act will apply to poultrymen also. If a fellow gets scared, a hen might peck him, he is in danger of bumping his head, or something of that kind, he will have to be insured; and the orchard man will have to be insured.

PROF. SURFACE: Truck gardeners and market gardeners.

The CHAIRMAN: Yes, even the minister, I believe, will be in danger of a chicken bone and have to be insured. In this discussion there has nothing been said about any cheap source of potash. I would like to call on Mr. Campbell, of Crawford county, to give us his idea.

MR. CAMPBELL: I was not thinking of saying anything. There are a good many farmers in Pennsylvania and I know that in northwestern Pennsylvania with the wonderful inert stores of potash that we have in those glaciated soils up there, if we make use of and save what we have got, we do not need any, I don't need any on my farm, I use what I have got and I use it by having concrete floors in the barn that have no auger holes in them. A good many fellows in our county haven't got them yet, and I know those fellows are going to the greatest extreme in order to get potash, and I think that if the potash going down through the old barn floors of Pennsylvania could be stopped and applied to the land properly, that this apparent need of potash would very largely disappear in a good many lines of agriculture, especially. Of course there are particular lines that need extra supplies of potash, but we fellows that are crop growing and doing general farming can very largely do away with it or the apparent need of it by using what we have got, and the more I farm and the longer I farm and the more I see of the agriculture of the Eastern and Central United States, the more I'm inclined to believe that that

same thing might be said with regard to some other of our fertilizers ingredients that we have beeu setting such store by in past years.

We farmers too many of us have got a one sided idea of the need of more plant food in the soil, because we fellows that have been talking iu farmers' institutes and writing for agricultural journals and going out and handing out information that the farmers have been trying to apply, have put too much emphasis on the need of more plant food in the soil, and the longer I farm, as I say rightly, the less I see of that need, even where we are not applying very much, and I know the day is going to come and has come already, on some of our land, that we are not going to use any commercial fertilizer of any kind and the land's producing better crops than it ever produced before. (Applause).

I like to talk about things permanent, and the most permanent agriculture that the world knows to-day is to be found in China and Japan, an agriculture that has been maintained for four thousand years; before Leibig invented chemical fertilizers, they farmed that land and to-day the land is supporting a greater population and I believe producing greater crops than on any other part of the earth, and it was farmed four thousand years before chemical fertilizer was invented and is the oldest example of agriculture the world knows today; and if that is true, permanent agriculture in this country can be established on somewhat the same basis, the basis Brother Herr back there spoke about a while ago. Now I am not going to talk, that is not part of my busiuess in these meetings; I do too much of that in the State of Pennsylvania anyhow, as a lot of you fellows know.

MR. SCHULTZ: I am a fertilizer manufacturer—

The CHAIRMAN: We are well aware of that.

MR. SCHULTZ: Yes, and it seems to me that Mr. Brong was gunning for the fertilizer manufacturer, and that reminds me of a little story if I am allowed to tell it. Years ago I lived in the State of Florida, and one day I was out there gunning for squirrels, and I was in the pine woods and those fox squirrels were right at the very top of those trees and I was banging away at them and a friend was with me. I didn't get any, but this friend said this: "Mr. Schultz, just you keep at it, it's fun for you and it don't hurt the squirrels."

The CHAIRMAN: If there is no further discussion, we will take up the report on Wool and Textile Fibres, by Mr. S. C. George.

Mr. George then presented the following report:

REPORT OF COMMITTEE ON WOOL AND TEXTILE FIBRES

By MR. S. C. GEORGE, *Chairman*

Mr. Chairman and Members of the State Board of Agriculture: In attempting to report on this subject, I feel it is too difficult for one of my ability or experience to cope with; but never wishing to

shirk a task when it is imposed upon me, I shall make the endeavor, feeling that he who makes the effort is the one who is rewarded, rather than they who hear it read.

While the subject is Wool and Textile Fibres, yet it must be treated in a more general way: The animal, its value for food, its offspring, its habits, danger from enemies as well as for its fleece.

THE ANIMAL

The sheep must first be considered. Does anything on the farm appeal so much to the farmer and his boys as a flock of fine sheep? The innocence of the young lamb, the gentleness of the grown sheep, the almost human instinct of the mother when caring for her young, and even the more vigorous efforts of the male to protect the flock from enemies. Even his attack upon the shepherd during an unwary moment, and arousing his ire for the time is soon forgotten in the large fleece he will yield at shearing, or the sturdy lambs that will be seen skipping on the hillside in the gentle springtime.

Where sheep originated is a question difficult to answer. They are the first of the animals domesticated by man, and reasonably so, since they supply the two principal wants of the barbarian, food and clothing. They are found in every country, not entirely savage, from the Artic to the Torrid Zones.

There are many distinct varieties of sheep; some valuable for their wool, some for their flesh, and others are dual purpose, producing a good fleece and still have a fine carcass. The selection of a flock will therefore depend upon the purpose for which they are kept. If the production of wool is the principal aim, then individuals of the wool breeds should be secured. But the flesh of the sheep has become so well known as an article of food that it ranks high today as one of the best of meats on the market; not only in quality but in price. Some years ago it was contended by certain consumers that the flesh tasted from the wool, but the skillful butcher can satisfy anyone that this is a fallacy. Hence when the flesh is good for food and the wool for garments and cloth, one of the medium wool breeds should be selected.

Among the more prominent breeds are the Leicesters, Cotswolds, Southdowns, the Lincolns, Oxfords, Shropshires and Merinos. The Lincoln sheep were first imported into the United States in 1835. The Cotswold in 1832. The breeding of the Merinos was begun by Mr. Atwood in 1813. In any case, whatever may be the breed, it is important that strong, vigorous animals be secured. Sheep, like other animals, should have good size.

In starting a flock of sheep the inexperienced man should begin with a small number, probably twelve or fifteen ewes. We have found on our farm that the Merino ewe was a very profitable one to keep. A little harder to winter, not being quite so hardy as some of the other breeds but not so hard to summer not requiring so much range, not so likely to jump and not so liable to disease, and when bred to a ram of some of the open wooled breeds, the lambs were large and good sellers, never failing to make a good profit. Quoting from the Secretary of the Delaine Merinos Association: "The importance of a better fleece is the leading question of today among breeders who are trying to produce better Merinos. Wool of a higher

grade, a quality from which the higher class of fabrics can be made. Evenness of fleece and fineness of fibre are two things to be considered." He says further, that the Tasmanian fleece grown on an island near Australia is our strongest competitor.

Not only is the fibre to be considered but the oil and difference in shrinking from scouring. The preparation of wool is very important. Several years ago, all sheep were driven to the creek, or a dam made in the meadow brook on the farm, and were washed before being sheared. When the owner did this himself he could have reasonably clean wood, but when some one else had to be employed to do the work it was not so well done. Then when time was given for the wool to dry on the sheep before being shorn, it accumulated a good deal of dirt. Some was tub washed; that is, after being shorn, was washed by hand and dried in the sun, and some was shorn and sold without being washed. In this way there were too many grades and too many prices, the washed wool not being of the same quality. Now no one washes his sheep nor his wool, but all is shorn and sold as it comes from the sheep.

It is a good plan with breeding ewes to tag them; that is to clip away the locks from the hind legs and udder, before lambing time. This relieves danger of the accumulation of filth and the breeding of worms that often results from the neglect of this. This wool should be kept by itself and sold as such.

PROFIT IN SHEEP

That sheep are one of the best money makers on the farm cannot be denied. Our own experience has proven to us that with a flock of sheep, after counting off one-half for feed and care, as the share man usually gets, has yielded a profit of 33⅓% on our worst year, on the money invested, while better years have given us 70%. I wish to quote from a clipping in our own county paper. The gentleman named is my own neighbor of about three miles distant: "D. W. Anderson, of Parkwood, a progressive farmer, has demonstrated to his own satisfaction, that there is money in sheep in this country. He brought 55 lambs to Indiana on Thursday. They weighed 5,200 lbs. or nearly 95 pounds each and brought $7.00 per head. Half of the number were twin lambs. Counting the wool secured from the ewes which raised the lambs, each ewe has brought about $10.00 this summer. The entire flock has made Mr. Anderson more than a dollar a day for the past four years."

The price of wool is stronger at the present time.

Great Britain has proclaimed further, though not definite limits on the exportation of wools from her colonies. Foreign markets are stronger than in the recent past, while prices are higher than a year ago in Australia, Africa and South America. The advance amounting to 50 to 75 per cent. on most grades. Even if prices were not higher on other continents the advance on ocean rates would add to the cost of wools here. Ocean transportation is at a premium these days, and there is no commerce commission to prevent vessel owners from charging all they can get. As a natural result of these conditions and the big orders now in hands of the mills our wool market has shown strength in recent weeks, and if the present war continues the chances are in favor of the producer.

SOME DIFFICULTIES

The old adage that a change of pasture is good for sheep is not only true but it is essential. Sheep are great scavengers, they clean up many of the weeds on the farm and along the fence rows. Many claim that they will live on these and require very little attention; but it is evident that the sheep, like other animals, respond to good care and treatment, and the better they are cared for the more profitable they are. A change of pasture is more essential than a very large range. Therefore it is better to have the pasture divided into fields and change the flock from one to another every week or ten days than to allow them to roam over the whole pasture at will. And here comes in the fence problem. Fencing material is so scarce on the average farm, and timber so high in price that the farmer can hardly afford to use it, and the material we buy is scarcely worth putting up. Here, again the war looms up. Galvanizing material is so expensive and difficult to get that much inferior wire is on the market. Sheep require a closer fence than most other stock. Hence this is one of the problems that is hard of solution. Other animals may be kept in close quarters but not so with the sheep.

ENEMIES

The worst enemy the sheep man has has to contend with, especially the one who lives near a mining district, is the much discussed or cussed dog. According to statistics, compiled by L. H. Wible, Statistican of the Department of Agriculture, the sheep killed by dogs in 1913 were 6,393 and the number injured were 4,845. The average price paid for sheep killed was $6.35 and for injured $2.85 or a total of $54,322.70. Now how many dogs would it take to be worth that much money? We think there is not one dog in a thousand that is worth the price of the lead it would take to put him out of existence.

The number of dogs killed were 1,419 and this cost the State $1,719.56. The amount expended for the payment of horses bitten by mad dogs was $2,593.37 while the amount expended for dog tags was $2,813.31.

We find further that the number of sheep in Pennsylvania declined from 1,531,066 in 1900 to 883,072 in 1910, a decline of 43%. From one of the leading sheep states of the east, we have fallen away until the last census reports that only 11.6% of our farmers report sheep among their livestock.

Other causes may enter into this, such as tariff tinkering, and diseases of sheep, also the fence problem of which I have already spoken, but the dog is the principal cause.

In Washington county, the great sheep growing county of the State, last year the funds for paying sheep claims were exhausted, and the claims were three years in advance of payment. It was further reported that the number of dogs in that county was one to every three taxables, while some of the towns or villages did not report so many, it was believed that the assessors were negligent. A friend in Cambria county informs me that when a farmer undertook to rid his farm of dogs that the dog owners burned his barn to the ground.

Now, how can sheep be raised under such conditions? We are not going to propose any dog law; but we do think no foreigner should be allowed to keep a dog, and no dog, owned by any person, should have more privilege than any other domestic animal.

The CHAIRMAN: Is there any discussion of this report?

MR. DEWITT: I think that this report is one of the best reports that has ever been read before the Board since I have been a member, and he winds up with the same argument that every report has wound up with, and that is the *dog*, and the last legislature ought to be ashamed of itself on account of the Dog Law that is put upon the statute books of this Commonwealth, with all the different strings and means to prevent putting that law into effect. You all are perhaps more conversant with the law than I am, but the other day I said to the assessor, who, as you know, is under obligations to assess every dog and to carry a tag with him and know that the tag is put on and collect a fee from the man who has the dog—I said to him, "How did you make it?" He said, "I found thirty dogs up in the upper end of the town that nobody owns;" A small village like ours, fifteen hundred or sixteen hundred inhabitants. There should be some means, gentlemen, taken at the next legislature to get rid of these dogs—what expression did he use—these cussed dogs, in the State. Tioga county has hundreds of acres of land to-day that are not being used, but which were formerly used, just for the reason that dogs have run the sheep out of our county, and not only out of our county, but we hear the same thing every time people get together, and we, as representatives from each county of the State, are powerless to have a law passed to protect a product of the farm, that there is nothing so easy to get money out of as sheep, for I used to keep anywhere from one hundred to a hundred and fifty sheep myself. I hope when the next legislature meets they will not be so afraid of the labor unions of this Commonwealth and that they will pass a law driving the dogs out of the country, especially those that have no owners.

A Member: The Dog Law reminds me that the member of the legislature that introduced that bill was drunk—I know some of them were. One of the provisions under which a dog becomes an outlaw is the most inconsistent thing; one provision is that you daren't shoot a dog for chewing up game out of season that wears a tag with his master's name and post-office address on the plate on his collar, and you have got to notify that man once before you dare kill his dog. I have never been able to notify the owner because I couldn't catch his dog. I have to shoot the dog to read the name on his tag. I can read the name, but first I have to fix the dog so I can read it.

MR. GEORGE: As you know and as the gentleman has said, they are required to carry those tags along and collect that tax as soon as they assess the dog. Well it has been found in our county almost impossible to do that. Our Commissioners have made a ruling recently, since the new Board went in—they took their seats at the beginning of the year, and they extended the time, they found that quite a number of these licenses were not paid; they extended the

time, I believe, to the twenty-fifth of this month allowing them an increase of 8% on the regular fee on the dog tax, that to go to the collector of the dog tax; they gave them that much time and added 8% to it, and still it is not going to solve the dog problem; in our county it has driven the sheep out of the county and some persons would call them harder names than I used in my report.

MR. SCHULTZ: It seems to me that if we cannot get the laws we want, it is our own fault. I feel more convinced on that point than I ever did. But I must go back to the fertilizer business. Last year we formulated a bill to be enacted into law protecting the farmer along commercial fertilizer lines, which was a good bill and it ought to have been made into law and it was not. Why wasn't it? It was dropped simply because the farmer was not up to his job; the farmer originated the bill and put it in the hands of the legislature, then forgot it.

What did the fertilizer people do? I think that bill that was started through my agitation in this body here, in fact I know it was, and it was a good one. What did the fertilizer people do? Just before the bill was up, I got a notice that I should be at Harrisburg on a certain day in the interest of commercial fertilizers, and it was a pretty strong notice, and when I got there they asked me to go before the legislature to undo that very bill. I couldn't do that, and yet I couldn't go before the legislature and defend it because I had no right to get the animosity of all the fertilizer people on top of me; I had no right to risk my business. All the big companies were represented there and they simply took hold of that bill and that was the last you heard about it. Now if the farmers had been there—the people that put those men into office to enact those laws—and told them what they wanted and insisted on it, they would have got it passed, there is no question about that, and it is no use for us to come here and talk those things over and forget them; at the vital point we fall down, and that is a mistake.

MR. R. L. MUNCE: I represent Washington county. I don't know that I have any rights or privileges on the floor; I am not a member of your Association, I am sorry to say, but I am mighty glad, as President of the Sheep Breeders' and Wool Growers' Association of Pennsylvania, to be with you. We are trying to put the industry again on its feet as it was in years gone by. I know there is a disposition on the part of our Governor, if you heard his statement this morning, and also I talked to-day with the Secretary of Agriculture, to bring about this sheep growing industry in the State of Pennsylvania, and I am mighty glad to know that this body is also taking note of the importance of the industry. I feel that you members, if you go about over the State and preach such doctrines as has been preached here by the paper read, that it is bound to do a lot of good, and I don't know of any one thing this Board of Agriculture can do that will bring more pleasure and profit to the State of Pennsylvania than to put again on the map the sheep industry of the State.

In regard to the Dog Law, of course that is one of the crying evils and one of the things we have to contend with. Three years ago I lost a hundred and forty head of sheep myself with dogs, and I

know what that means. Our county last year was fourteen thousand dollars behind in paying for her sheep lost. But I want to say to you that last year we came here to Harrisburg and there were a number of bills up in regard to legislation, and I never saw—and I have been at the business for forty years, and I would like to tell you how at both here and at Washington City, lobbying in the interests of the sheep and wool industry, and I never saw a set of men that were more disposed to do something for the sheep industry of the State of Pennsylvania than they were last year in the legislature. And, as the gentleman over there said, we did not get as much as we ought to have had because the men who are interested in that thing were not here to follow it up. The last Dog Law enacted is the best we ever had. The gentleman says something about what to do with the dogs that don't have any owners. The law provides for that, that when the tax collector or assessors goes out and issues the tag, he issues the tag to the owner and takes account of that dog and reports back to the Commissioner where he found certain dogs, and then also, in addition to that, he is required to publish a list of those who have paid their tax. Smith & Jones read that list, and his neighbor naturally looks at the list of dogs listed there to see whether certain men have paid their tax and whether their dogs are listed or not. If they are not, it is his personal duty to let the Commissioner know that that man has not listed his dogs and has not paid the license on those dogs, so it is up to each individual to see that the Commissioner is notified and at the end of thirty days it is their duty to send out the constable or the State Constabulary guards to kill those dogs.

Now the law provides for disposing of the dog that does not have any owner. Of course there are many amusing things in connection with this. I talked to an assessor not long since. He went to a Dago shanty where the man was known to have at least three dogs, and the man told him "I had three dogs, but I hung them. I don't have any dogs here!" He went to the next-door neighbor and said "How many dogs did you get from the Dago?" He said "I didn't get any, he hung his dogs." He said, "I hung those dogs all over there this morning." He started an investigation and found the three dogs hung in fertilizer sacks in a little wood-shed; so he got by. (Laughter.)

But I want to say again that I don't think you have anything that would be of more importance to the State of Pennsylvania than to foster and promote this sheep industry, and I want you to keep also after the dogs, because if we get rid of them we can do a lot, and I am glad to know that the State Board of Agriculture is paying attention to the matter and that the Secretary of Agriculture is going to give it his attention. On the twenty-third and twenty-fourth of next month, we are going to have a meeting at Pittsburgh of the State Livestock Breeders' Association, and the Dairy Union, etc., and the Pennsylvania Sheep Breeders' Association are going to have a meeting down there and I hope that some or all of you will come down and help us boost the sheep industry of Pennsylvania.

MR. KERRICK: In the county of Bradford, the Commissioners have put that law in force and have given the people until the first of February, and all dogs that are not properly tagged then are to be killed by the constable.

The CHAIRMAN: In connection with this dog question, last winter it required some courage to get up and introduce a Dog Law; a man was ridiculed all over the House; they began to bark as soon as he got up to introduce the bill. If that is the caliber of men you send to Harrisburg, and it is true that the stream does not rise higher than its source, who is to blame? We will proceed with the programme and will now have the report of the Sanitarian, Dr. S. G. Dixon, of Harrisburg.

Dr. Dixon then presented the following report.

REPORT OF SANITARIAN

By DR. SAMUEL G. DIXON

Two years ago I called your attention to Doctor Van Slyke's valuation of the loss to farmers of the United States through the waste of liquid manure; his estimate of this loss being seven hundred millions of dollars annually. I also tried to explain to you the activities of the Department of Health in purifying the waters of the State and the results which were being obtained in the saving of life, suffering and sorrow. During the two years which have elapsed since last I had the pleasure of speaking with you, this work has been continued and the death rate from water borne diseases further decreased. During these two years our stream inspectors have been out upon the watersheds making their inspections and securing the abatement of stream pollutions, among which liquid manure from barnyards plays an important part, and it is particularly along the line of conservation of our natural fertilizers that I wish to make my report to you today.

We believe that the farmers of the State are beginning to understand that when they are ordered to conserve the liquids in their barnyards and not permit them to be washed into an adjacent stream, they are not being persecuted or having hardships imposed upon them in order to save others but that not only the inhabitants of the cities and towns down stream are protected by this work but that they themselves are benefitted as well.

During the last two years over two thousand four hundred barnyard pollutions have been discovered by our inspectors and abated by the farmer. Many of these abatements are made at a very slight cost—in some instances by throwing up an embankment of earth around the yard and turning the surface drainage of the adjacent ground in another direction; in other instances by putting a down spout on the barn roof and carrying the roof drainage outside the barnyard, and in extreme instances by the construction of a concrete retaining wall. Just lately a farmer in Porter township, Clinton county, built a concrete wall around his barnyard—120 feet in length, 10 inches thick and 3 feet high in compliance with an order of abatement. When our inspector went to make his re-inspection after the wall had been built the farmer told him he would not have it away again for five times what it cost.

Pennsylvania is saving some of the seven hundred millions of waste in the United States found by Doctor Van Slyke. Prof. Snyder in his excellent book on "Soils and Fertilizers," published in 1911, tells us that a milk cow when fed a balanced ration will make from sixty to seventy pounds of manure per day of which from twenty to thirty pounds are liquid, and that when a cow is fed clover, hay, corn fodder and grain, about one-half of the nitrogen of her food is in the urine; one-fourth in the milk and the remainder in the solid excreta, hence if the solid only is collected only one-fourth of the nitrogen of the food is recovered, while if both solid and liquid are utilized, three-fourths of the nitrogen is secured. The ordinary horse produces about fifty pounds of manure per day which while by itself of questionable value, is well known to be valuable when mixed with cow manure.

An average farm with six cows and four horses will produce in the barnyard probably fifty tons of manure per annum which, in comparison with commercial fertilizer, has a cash value of about $250. The nitrogen in commercial fertilizer represents about $\frac{1}{3}$ of its value, therefore, the nitrogen in the natural fertilizer would be worth approximately $80 per year on the average farm. Two-thirds of this nitrogen is in the liquid manure and if this is wasted the farmer is losing at least $50 each year, but during the last two years on 2,400 farms in the State this valuable product which two years ago was permitted to drain into the streams is being saved, representing a total saving of at least $120,000 a year to the farmers of the State. The total cost of making the necessary improvements on these premises probably did not exceed $20,000, and the saving to the farmers of the State in one year exceeded the total cost both to the farmer and to the State in not only conserving wasted fertilizer but in protecting streams from pollution and our people from water borne diseases. The older civilizations of Europe, and even China, in their intensive farming long ago learned the value of liquid manure, and perhaps for this reason alone and without any idea of protecting the purity of their streams or the health of their people have carefully retained this natural fertilizer and not permitted it to be wasted.

Just now all this means a greater saving to the farmer than ever before in the history of this country on account of the extremely high price of artificial fertilizer. It is very gratifying to me to be able to report that the farmers are beginning to realize the value as a fertilizer of this liquid which heretofore has been treated as a waste. I have often been asked why some of my hillside crops are irregularly streaked with dark green—it is because I have a primitive method of spraying manure water with a hogshead and a hose which does not spray the water uniformly, therefore, the vigorous stalks of wheat that have received more than their usual measure of food show this dark green color.

This is a day on conservation of our natural growth. As we look over our naked mountains we regret the waste of our timber lands. Men are spending much time and thought upon devices to utilize the waste thrown out in former years from our coal mines, and so the farmer must realize as well that in the past he has not been getting

the full value from his soil. Our farm lands must produce more if our ever increasing population is to be fed and if the soil is to feed us to must in turn be few. We must no longer waste our most valuable fertilizer. I regret to report that many of us are continuing to allow our most valuable fertilizer to be washed away. There are one thousand barnyards which have come under our notice that have not yet been improved. We hope that by another year this number may at least be greatly diminished.

The CHAIRMAN: Is there any discussion of this report? If there is no objection it will be received as a part of the proceedings. We now come to the report of the Microscopist and Hygienist, Prof. J. W. Kellogg.

Prof. Kellogg then presented the following report:

REPORT OF THE MICROSCOPIST AND HYGIENIST

By PROF. J. W. KELLOGG.

The subject matter of the report of your Hygienist and Microscopist should be, so far as possible, in keeping with the title; and as the outward appearance of our dwellings and other buildings, which should ever be pleasing to the eye, is in the nature of "hygiene for buildings," it seems fitting at this meeting of the Board to report what has thus far been accomplished in the way of properly caring for and prolonging the life of our buildings. As our bodies are in danger of destruction from disease, if not properly cared for and protected, so are the structures in which we live, house our stock and store our goods subject to a like destruction by the continual tearing down processes of nature,—if they are not kept in repair and protected by a combination of materials which we call Paint. We are all familiar with the splendid appearance of those farm buildings which are kept in repair and painted from time to time as required, as compared with those structures which are neglected in this respect and which have fallen into ruin and decay. Some buildings which are not cared for soon become in a wretched and dilapidated condition where decay has started and provide a breeding place for germs and the collection of dirt. It behooves us, therefore, to keep our buildings in repair and to protect them from the elements, if we would wish to give to our farms the appearance of cleanliness, thrift and prosperity. This is especially true in the case of our dairy and stock barns.

At the last session of the Legislature, Pennsylvania's first Paint Law was enacted which regulates the sale of Paint, Putty and Turpentine. This law became effective the first of last December; and as we have had for a number of years a good Linseed Oil Law, the Secretary of Agriculture is now authorized to keep his watchful eye on the character of all paints, oils, putties, and turpentines which are sold in the State. A few years ago one of our Specialists, in his report to this body, described the character of paints, going somewhat

into detail as to their composition and advocated that steps be taken to have such a law adopted. After a number of unsuccessful attempts, we are now gratified to report that the Department of Agriculture can have something to say as to how these painting materials shall be labeled and sold in Pennsylvania. Only a few other states have paint laws at the present time, and while our law is not as strong in its requirements as it might be, it is a step forward in constructive and necessary legislation. The law does not require the formula label or chemical composition to be placed on each can of paint, but it does require that nothing shall be placed on the label which "shall bear any statement, design or device regarding the ingredients or the substances contained therein—which shall be false or misleading in any particular." This means that hereafter mixtures of a small percentage of white lead and the balance clay,barytes or such inert material cannot be sold for "Pure White Lead." It means that diluted pigments and the many diluted colors in oil can no longer be sold in Pennsylvania for the pure and full measure articles, for from now on all painting materials which are manufactured and offered for sale must have clearly stated on the label the net weight or measure of the contents, the true name of the product and the name and address of the manufacturer or importer.

It is advisable to here call your attention to the fact that the law does not control interstate shipments of paint such as is sold by large mail order houses or retail stores where shipment is made direct to the consumer. When buying paints, therefore, it is well to bear this fact in mind as, no doubt, it would be safer to purchase paints sold in the State by reputable and responsible firms who place the name of their company on the cans and in many cases show the chemical composition of the same. Since the passage of the paint law, it has developed that quite a number of legitimate paint products were being sold which had their special and proper place in the trade and which were diluted it extended but which were labeled and sold as pure or full strength articles. This situation is interesting as it shows that we were badly in need of a paint law. Many of the manufacturers of these articles have arranged to properly label their goods and have sent many of such labels to the Department for examination. Under the provisions of the act, the Department cannot object to the sale of these half strength or extended paints and colors providing they are properly labeled to show they are extended. A ruling has been made, therefore, that these materials shall be labeled in a plain and conspicious manner as a "Compound," therefore, when any of you gentlemen go to a supply house to purchase Pure White Lead, Pure Zinc, Pure Colors in Oil, Pure Turpentine and Putty be sure and look for the word "Compound." If you find it on the label you will then know that these materials have been "extended" as the trade call it, with varying amounts of Barytes, China Clay, Calcium Carbonate or some other "extender." As previously explained, these extended materials have their proper use in place of full strength lead, zinc and colors. For example, it is recommended by many expert painters that for an outside white paint a mixture of 75% of white lead and 25% of zinc white be used as such a paint retains its white appearnce longer than if pure white lead were used. In the case of certain colors, it appears that where

it is desired to prodnce a certain shade or tint in a mixed paint, it is more desirable to use an extended color as it is less difficult to thoroughly mix it with the pigment and oil than is the pure full strength color.

In the case of the many mixed paints the Department can only direct that a fnll measure be given and that no false claims be made as to the composition. It cannot require that the ingredients be shown on the label, but it can prohibit the use of mineral oil and excessive amonnts of water which have frequently been found present in large amonnts in some grades of mixed paints. It is not the purpose of the Department to attempt to advise as to what kind of paint or what brand of paint should be used; but when certain paints are being illegally sold we shall not hesitate to notify you to this effect. The question of the proper kinds of paints to be used for the many different uses is a problem for the expert painter.

We propose to analyze samples of the various paints on the market and tell you of what they are composed. We have equipped a laboratory especially for this work and with the limited means at hand, we are now arranging to collect samples of these products and analyze them dnring the present year. Unfortnnately we are handicapped at the present time by lack of sufficient funds to carry on this work as it should be done, for the reason that only $3,000 for the fiscal period was given us to protect the consumers of this great State from receiving falsely labeled and adnlterated paints. We can, however, get a splendid start and it is hoped at the next session of the Legislature sufficient funds will be given ns to enforce the provisions of the new paint law in a satisfactory manner to all concerned.

The CHAIRMAN: Is there any discussion of this report? If there is no objection, it will be received as a part of the proceedings of the Board. Next comes the report of the Entomologist, Prof. H. A. Snrface, of Harrisburg.

PROF. SURFACE: Mr. Chairman and Members of the Board: As I shall speak of some insects that have not been abundant or conspicnous thronghout the State and cannot illustrate my address by slides and pictures. I will show some of the specimens themselves. and I wonld like to ask my friend Hntchison if he will kindly see that these get to the persons interested in seeing them; he is a good hand in passing bngs.

MR. HUTCHISON: I helped yon kill bngs for a year.

PROF. SURFACE: You are a good hand in passing them. I will also submit photographs of some insects that have, for the past year, been very destructive in this State, and will leave them here to be examined as yon wish. All of those are the red leaf beetle, that was very destructive in the northern central and western counties of the State during the past year. We have worked out his life history and I am going to give it for the first time here today. These are a popular beetle, not related to the red leaf beetle and not the same species, so I will not pass these with them, because it might lead to some confusion.

Prof Surface then submitted the following report.

REPORT OF THE ENTOMOLOGIST

By PROF. H. A. SURFACE

(a) *New Methods of Pest Suppression*

During the past year the chief advance that has been made in regard to methods of pest suppression has been along such lines as of fumigation of the soil (chiefly with carbon bisulfid) for soil-inhabiting pests, fumigation of grain during warm or temperate weather for the destruction of grain pests, spraying with a coarse spray or sprinkling with large drops of sweetened poison spray for such pests as the fruit flies (including the Railroad Worm or Apple Maggot) and the root worms of cabbage and related plants, radishes, turnips and onions.

The use of tobacco decoction with a little soap added has proven highly satisfactory for the destruction of suctorial insects, such as aphids, young plant lice, redbugs, leaf hoppers, etc., and also for mites, red spiders, etc. One ounce of tobacco extract and one quarter pound of soap in four gallons of water has given good results for such pests.

The destruction of Lecanium scale with lime-sulphur solution, applied thoroughly while dormant, one-third stronger than for San Jose scale, or specific gravity hydrometer test of 1.04, has been fully demonstrated, as was also the prevention of damage by the Codling moth by means of lime-sulphur spraying without the addition of arsenate of lead.

(b) *New Features of Control of Insects Generally Established*

For the scale insects nothing is better than strong lime-sulphur solution applied during the dormant season; but we have demonstrated that for the control of the *Lecanium* this material must be used one-third stronger than for the San Jose scale, or specific gravity hydrometer test of 1.04.

Altho the Codling Moth has been controlled by spraying with lime sulphur solution alone just after the blossoms fall, repeating this in two weeks, and again in two weeks after that, without the use of arsenate of lead, the formula that we recommend as best for this pest consists of one gallon and one quart of concentrated lime-sulphur solution, homemade or commercial, and one or two pounds of dry arsenate of lead, in forty-nine gallons of water.

The much-dreaded root maggots of cabbage, turnip, radish, onion etc., have been controlled by spraying with a coarse spray, or by sprinkling with drops, of sweetened poison solution of the foliage of plants before the female flies lay their eggs, so that these adult pests are killed in the process of feeding.

The prevention of borers in fruit trees by the use of lime-sulphur solution containing sediment, making about three applications per summer, as a wash or coarse spray, has been further demonstrated. One quarter ounce of arsenate of lead can be added to this with safety, but is not essential.

The Corn-ear Worm was unusually bad last year, but can be controlled by dusting with one part of dry arsenate of lead in six parts of sulphur, making about three applications at intervals of two or three days each, commencing when the silk first commences to show on the young ears of corn.

(c) *Insects Newly Introduced or Not Yet Widely Spread in Pennsylvania*

We have a report from the southern part of Clearfield county of a remarkable outbreak of the insect known as the Walking-stick *(Diaphomera femorata)*. They defoliated vegetation of nearly all kinds, including fruit trees and forest trees, over an area of some acres. The dropping of their eggs on the leaves under the trees sounded like the falling of rain. These pests can be killed by arsenical spraying, or their eggs can be destroyed by burning them on the ground among the fallen leaves, where they remain exposed during the winter.

A newly introduced pest in Pennsylvania is the European Hornet *(Vespa cabro)*, which did considerable damage to the peach twigs of Mr. J. A. Faust, of Mowersville, Franklin county, Pa. These worked by eating away the bark and cambium of the twig, as shown by specimen herewith submitted. This is the first report of the European Hornet in Pennsylvania, altho it is known as introduced and very destructive in the State of New York. It is possible that during its feeding period it can be destroyed by spraying with one-half ounce of arensate of lead in each gallon of water, applying this to the twigs on which it feeds. Sweetened poisoned liquid is also recommended. Its marks are conspicuous and characteristic. It makes a paper nest, as does our American hornet, but is more liable to nest in holes in trees, in the ground, or in stone heaps. Where there are evidences of its presence, as shown by injured twigs, its nest should be sought and destroyed.

The Apple Seed Chalcis has continued to be destructive in the northern part of Pennsylvania. We have worked out its life history, and know that this insect inserts an egg by means of its long ovipositor when the fruit is about the size of a robin's egg, reaching the seed in which it feeds as a young larva, developes, changes to a chrysalis and passes the winter. The fruit may hang on the tree, or fall to the ground. It bores out through the seed and fruit in the spring to produce another generation. The best possible means of suppression is to destroy all fallen fruit, and all that hangs upon the trees in winter. Pasture with pigs or sheep. This pest causes the fruit to remain very small, stunted and irregular in shape.

The Railroad Maggot was not as bad as some years, but it continued destructive in summer apples, especially sweet varieties, in the regions drained by the northern waters of the Susquehanna River. The use of a coarse poisoned sweetened spray, or drops of this liquid, on the lower limbs of trees in infested regions will destroy the insects before they lay their eggs.

The Pear Midge is spreading in the southeastern part of Pennsylvania. Hundreds of little fly larvæ or midges may be found as minute maggots in the fruit of the pear when it reaches a size as large

as the end of a man's smallest finger. The fruit swells and drops, and the pests come to maturity within it. Spraying just after the blossoms fall with tobacco decoction or soap solution, repeated in two weeks, should suppress these pests.

The Pine Shoot Moth has been found by our inspectors doing damage to pine trees in certain parts of the State where it has been introduced recently. It should be watched, and cut out and burned, or it will result in considerable loss and deformity to pine trees.

The Pear-leaf Blister-mite continues to be a serious pest to pear and apple. When the leaves commence to look as though soot had been rubbed into them in blotches, they should be sprayed once per week with tobacco decoction and soap, or with kerosene emulsion.

The Angoumois Grain Moth has continued to cause much loss in the southeastern quarter of Pennsylvania. It is spreading and needs attention. Fumigation when the temperature is above 60 degrees, with one pound of carbon bisulfid for each one hundred cubic feet of space occupied by the grain, is effective.

(d) *Native Insects with Modified Habits*

It is my great pleasure to report to this Board some new and important discoveries by the Bureau of Zoology of the Pennsylvania Department of Agriculture during the past summer and fall, concerning two important insects which almost suddenly became abundant and destructive, and the habits and native food of which were not known until these investigations were made, and have not been published anywhere before this time. These insects are the Red Leaf Beetle *(Galerucella cavicollis)* and the Poplar Beetle *(Lina tremula)*.

Two years ago there were a few reports of damage to the leaves of cherry and peach trees by the Red Leaf Beetle in Lycoming county. A year ago there were reports of injury by this pest in the counties adjoining Lycoming. Last summer there were reports from more than a dozen counties of northern and central Pennsylvania, that this insect was severely damaging peach and cherry trees, and in many cases attacking apple, pear, plum, and even some herbaceous or smaller cultivated plants. Dr. L. O. Howard, U. S. Etomologist, informed the writer that the native food plant and the habits of this pest were not known. We took up investigations at once, and discovered that its native food plant was the wildfire cherry *(Prunus Pennsylvanicus)*.

In our investigations we found that its larva feeds only upon this plant, while the adult beetle feeds upon other trees and shrubs, as mentioned above. The adult beetles come forth in the latter part of the spring, feed upon the leaves, mate, go down the trunk of the tree to near the surface of the ground, and lay their eggs in rubbish, or on the ground, or on the bark of the trunk just above the ground. The larvae hatch and crawl up the trees to the leaves of the wild cherry on which they feed. After they become grown they come down the trees again to pupate at the surface of the soil. After they transform the adults go to the leaves to feed again, and then scatter and find protected places to pass the winter, chiefly in rubbish. Thus its life cycle is worked out showing one brood per year, and here published for the first time, with statements as to its native food habits and remedies.

The remedies are easily applied as they consist in spraying with nothing more than arsenate when either the adult beetles or the larvae are feeding. We recommend one ounce of arsenate of lead in one gallon of water. On the peach make it half as strong. The destruction of the fire cherry is also recommended to effect the destruction of this pest, as it would then be exterminated or obliged to change its larval feeding habits, if possible.

In this connection I am glad to report that our Field Assistant, Mr. H. B. Kirk, had opportunity to make observations on a closely related beetle, which likewise is not generally known. Because this pest feeds on the Aspen or Trembling Poplar *(Populus tremuloids)* we call it the Poplar Beetle *(Lina tremula)*. Altho other species of poplar were near at hand this insect was found to feed only upon the poplar correctly called the Trembling Aspen. Of this beetle there is but one brood per year, with habits similar to those of the Red Leaf Beetle.

(e) *Some Insect Friends*

We must not lose sight of our beneficial insects, as there are really more species that perform services for mankind, than there are that destroy his property. For example, we well remember when the destruction of bumble-bees was thought to be the proper thing. We have known farmers to carry straw to burn their nests. Now we know that clover and allied plants are essential in building up soil fertility, and that to produce the seed of such plants the bumble bee is an essential agency. Whether they be internal parasites, like the effective destroyers of the San José scale, or predaceous insects, like the Lady Bug, the Lace Wing larva, or the ground beetle or whether they be scavengers, like burying beetles and flesh flies, dragon flies destroying mosquitoes, or whether they be pollen carriers for the fertilization of blossoms, there are hundreds of insects worthy of our study and preservation.

(f) *Effects of Vertebrate Destroyers of Insects*

Attention must be called to the efficiency of birds, mammals, reptiles and amphibians as destroyers of insects. The spray pump is but a temporary palliative. Where it is possible to get these natural enemies of insects to work for us we are using Nature's method and gaining ground. Further studies convince us of the importance of recognizing and preserving our various insect enemies.

(g) *Obnoxious Bounty Laws*

One of the best known men in Pennsylvania, who is interested in the conservation of wild life, recently wrote to us that he wondered how long this State would continue to suffer from depredations of hordes of rodents and myriads of insects, because of its bounty laws, which not only permit the destruction but place a premium upon the enemies of our obnoxious creatures. Let us not take it for granted that the owls, hawks, foxes, skunks and the weasels are the enemies of the agriculturist, but rather let us comprehend readily that without the co-operation of such creatures we shall have greater difficulty and expense than ever before in making the soil yield returns for the laborer.

During the reading of the report the following discussion took place:

A Member: What is the difference between Arsenate of Lead in the paste and in the powdered form?

PROF. SURFACE: Use twice as much in the paste form. It will cost you a little more in the powdered form, but in the long run it will go further. In my own orchard work, I use the powdered form altogether.

MR. HUTCHISON: Will that kill the Club Root?

PROF. SURFACE: The Club Root is a distinct disease. I proved, on the premises of Hon. Henry L. Walton, former Speaker of the House, that mixing equal parts of sulphur and lime destroys the germ of the club root in the soil and that disease does not appear. Mix equal parts of sulphur and lime and stir a small handful of that right in the hill where you are going to set the cabbage plants. I notice my friend Mr. Bond and others watching carefully what I am saying. This is a new thing, the destroying of the root maggot on cabbage, cauliflower and related plants, and turnips, radishes, beets and onions, by a sweetened poisoned liquid, applied not as a spray, because it is so fine that it drys before the winged insect gets to it, but use Arsenate of Lead, water and molasses, from a half ounce to an ounce of Arsenate of Lead in a gallon of water, with enough molasses and stir up to sweeten it, then sprinkle it with a sprinkling can over the foliage where the insects will appear later as larvae. The adult fly of the radish maggot feeds on this material before laying its egg on the plant, and is destroyed. It has been proven very thoroughly in three different experiment stations during the past year that that is effective. I might add, while it is not entomology, that this is the best preventive of damage by rabbits that can be had. There was a gentleman here last week who heard a man from Luzerne county say that he had found it absolutely successful in preventing the gnawing of his trees by rabbits during the past three years.

A Member: How would you apply that?

PROF. SURFACE: As a dust; one quart of Arsenate of Lead to six of sulphur. Apply it as a dust. One way to do that is to take a coarse sack and put the powder in it and shake it over the plant. In the South it is applied by putting the sack on each side of a mule and having a boy ride along beating each sack with a stick.

MR. BOND: What does that worm that affects the sweet corn during the season, do in the Winter?

PROF. SURFACE: It passes the Winter as a pupa in the ground and it is like the potato beetle or any other pest that has that habit, and it is much more likely to recur where you have the crops in continuously in or near the same vicinity.

MR. J. ALDUS HERR: Quite a good deal of wheat in our county has been treated with this material for the moth. I had some treated by our farm agent which was successful. I also have seen some

wheat treated, but I had two sacks or bags in my granary, that we treated more severely than the rest. I had not sufficient seed wheat and had to use those two sacks of wheat, and the result was that a great deal of it did not come up, it spoiled the germination. Now the question is how severely need we treat seed wheat and not injure the vital parts of it?

PROF. SURFACE: That is a very important question and I believe that the details have not been fully worked out, because of the varying effects on seed, due to varying temperature. I mean to say this, if it is fumigated with a certain amount of carbon bi-sulphide when it is at a temperature of 60 degrees, it will not injure the wheat near as much as if it is at 80 degrees temperature; there is a law to be established in there relating to the amount of carbon-bi-sulphide to be used in relation to the temperature; it is not worked out, Mr. Herr, but that is the reason of it, we know that much. There is a little experimental work to be done.

The CHAIRMAN: Are there any further questions or discussion on this report? If there are none, the report will be received and printed as part of the proceedings of the Board. Next on the program is the report of the Advisory Committee; does the Committee have a report? Mr. Schultz, I think, is Chairman of the Committee. Mr. Black is a member of the Committee. Mr. Joel A. Herr is a member of the Committee. If there is no report, before we adjourn I would like to announce the evening program. Two eminent men will talk very interestingly and I would suggest that you arrive promptly at 7:30. The evening meeting will be held in the Hall of the House of Representatives and will be opened by the Governor. Is there anything further before we adjourn? If not, we stand adjourned until 7:30.

HALL OF THE HOUSE OF REPRESENTATIVES

Capitol Building, Harrisburg, Pa.

January 26, 1916, 7:30 P. M.

Vice-President Fenstermacher in the Chair.

The CHAIRMAN: The Governor cannot be here to open the meeting, I am sorry to say, but he will be here later. First on the program is an illustrated lecture by Prof. L. H. Dennis, State Director of Agricultural Education, entitled "Vocational Agricultural Education."

VOCATIONAL AGRICULTURAL EDUCATION

By PROF. L. H. DENNIS

It is sometimes necessary, these days, for a man who contemplates speaking upon any agricultural subject to first qualify himself, because there are so many persons talking about this subject who, some people think, have no license to talk upon it. I am reminded of that little paraphrase that runs something like this:

"Lives of great men are all reminders
That there's one unfailing song;
If a name we'd leave behind us,
Just be born upon a farm."

And so the man these days who can say, "I was born and raised on a farm," has said enough to qualify him in the minds of a great many people to speak upon an agricultural subject. I am not sure just what merit there is in the fact of being born upon a farm; I can say, however, that a boy can learn much and get much valuable agricultural experience if he is raised upon a farm. Now it happens to be my misfortune, if such be the case, not to have been born upon a farm, but to have lived upon a farm as a boy and to have had various experiences which I will not relate at this time. The fact of the matter is, it would not do, probably, for me to relate some of the experiences that I enjoyed on Sundays and other days when the folks went to town and left me in charge. I well remember one incident, however: In my days we used to plow with oxen and used them for various other purposes also, and I recollect that I did not enjoy the plowing with those oxen as much as I did the Spanish bull fight that I used to put on in the barn-yard when the folks were away in town. It was very fortunate for me, I suppose, that the folks never found out what my chief diversion was while they were away.

I am glad indeed to appear before you this evening and, in as modest a way as possible, attempt to give you some idea of what Pennsylvania is doing along the lines of Vocational Agricultural Education in the secondary schools of the rural districts. In these stirring times, when one nation is at war with another nation, when there are wars and rumors of wars, when the air is full of "preparedness" and intervention, anything that smacks of militarism is more or less popular and gets a ready hearing. I sometimes feel that it is wise for us to pause, even in times like these, and turn our thoughts away from destructive militarism and center these thoughts upon some of the constructive phases of our National life, such as the tilling of the soil.

You know, as a nation, we are more or less inclined to be hero worshipers. This has been emphasized very prominently in the past in the teaching of history in our public schools. The great men of this nation have been held up before the minds of the rising generation chiefly because of their services as statesmen or soldiers. I am not so sure but what we ought to do this; I think these men de-

serve the honor due them for such services; I believe there is a greater value in it, however, because of the stimulating effect it will have upon the civic life of the coming citizens of the Nation. I believe, however, that it would be a mistaken policy to neglect the study of the private and business life of these great leaders, for it seems to me the character of an individual is so developed by his private and business life that it determines, to a great extent, the type and amount of public service he is able or willing to offer. It is rather interesting to note that some, and in fact all of our text-books on history refer to George Washington, the central figure in this group, many times with reference to his services as a soldier; many times also in connection with his career as a statesman, but very seldom refer to him with reference to his occupation as a farmer. Now we know that George Washington lived on a farm, or rather a large plantation, in Virginia. We also know that Thomas Jefferson, another one of the great leaders of our country, was a farmer. We do not know him as a farmer, probably many persons are not aware that he always gave his occupation as that of a farmer. It is interesting to note, however, that it was only in the business of farming that he failed. He made a success of nearly everything else he undertook, but in farming he was not a great success, although he was a great lover of farming. Thomas Jefferson realized that the business of farming was indeed a big business. He realized some of its limitations in his day. You will recall, many of you perhaps, that he made some suggestions for the improvement of the plough of his day, which was a very crude affair. Thomas Jefferson, George Washington and Benjamin Franklin and other leaders of that day realized that there was a great need for more reliable scientific information concerning the great business of farming. I emphasize that they realized that way back in their day, and the fact that they did realize this showed itself in the formation of the first American Agricultural Society in the City of Philadelphia in the year 1785. George Washington and Benjamin Franklin were both members of this first American Agricultural Society. It was this first American Agricultural Society that really caused the development in Pennsylvania of the Pennsylvania Agricultural Society, established in 1851, if I am not mistaken, and this later led to the Pennsylvania Board of Agriculture, then called the State Board of Agriculture, and out of the activities of this State Board of Agriculture grew the very efficient Department of Agriculture which we have in our State today.

It is probably entirely unnecessary, when speaking before a body of this construction, for me to refer to the various branches of the Department of Agriculture of our State. They are carrying on many lines of agricultural endeavor in this State, and carrying them on so well that it would almost be out of place, I was going to say, for me to dwell very long upon this subject. I felt, however, that I wished to refer to it because I wanted you, first of all, to realize that the subject of Agricultural Education, in itself, to which I shall very shortly come, is not as new as some people would think. I want you to realize a little bit more fully perhaps than some of you have, if that is possible in such a talk as this, that that need was deeply felt in those days and that the agricultural agencies which we have today are possible because the agricultural leaders of a half

century, yes of a century ago, realized that need as we do today. I will throw upon the screen a few slides showing some of the activities of our own State Department of Agriculture.

There are many other lines of activities carried on by this Department that are just as much entitled to recognition as those I have shown here tonight, but time forbids my touching upon them. It may interest you to know that this State Board of Agriculture has been responsible for many lines of agricultural development in this State. It was this Pennsylvania Agricultural Society which later became the State Board of Agriculture, founded in 1851, as I stated before, that was really responsible for the founding of our State College of Agriculture. In 1853, just two years after the founding of the Pennsylvania Society of Agriculture, this Society recommended that an agricultural school be established in the State. The matter laid over until 1855, when the farmers' high school, as it was first called, was established. From the institution, in 1861, there was graduated a class of eleven students. This was probably the first class graduated in this country from an institution that was purely agricultural. My friends, there has been a marvelous development since that day. The class of eleven in 1861 has grown until today the enrollment in our splendid State College of Agriculture is somewhere between 3,500 and 4,000; the exact figures I do not have. It shows the merit of the institution. In 1862, Congress passed what is known as the Land Grant Act, by virtue of which each State receives certain grants of land, on the proceeds of the sale of which money was available for the support of these institutions, in part, provided the several states took advantage of the provisions of this Act of Congress by passing acts which gave the College State support, and the State has been committed ever since to this policy, of financially as well as morally and otherwise, supporting this State College of ours. It is an obligation on the part of the State.

The greatest work, it seems to me, that the State College is doing today—and they are carrying on many very valuable lines of work—one of the greatest lines of work that the College is doing today is the work of preparing agricultural leaders. My friends, I hope we all realize that this business of agricultural development, if we might so term it, is big enough, is so important to all the people of the State and the Nation at large, that it needs all the men that we can get. We ought to welcome the graduates of all our agricultural colleges; we ought to welcome all agencies. The business of farming is as important today as it ever was in the history of this country. The fact is, it is more important. These figures will give you an idea of how important it is. In 1890, 51% of the people of Pennsylvania were rural; today somewhere between 35% and 38% of the total population of Pennsylvania is rural. His Excellency, the Governor, this morning told us this, that only about 11% of our total population are farmers, and that percentage is slowly decreasing. A study of the population's statistics of the various counties of this State will show you that nearly every county in this State has lost in rural population, not only relatively but actually. It is a fact that the majority of the townships in Dauphin county and Cumberland county have actually lost in population since the year 1890. You may realize what the decrease in the rural population might be

relatively, it might be that certain rural district had more people today than they did in 1890 and still they might have a smaller percentage of the total population than in 1890; but the fact is that there has been an actual decrease in many of the rural townships as well as a relative decrease.

Here is the thing I want to call your attention to, regardless of the causes of this decrease, and it is a rather complex matter and I cannot go into it in detail, but regardless of the causes, here is the fact that makes this of importance to you and to me and to every person in this Nation of ours; there is a smaller percentage of the total population of this State and of this nation living in the open country and engaged in producing the food supply of the entire country than was the case back in 1890. I say that is of importance to the man in the city, it is of greater importance to him today than it was in 1890 when a larger percentage of the total population was living in the country. We are all familiar with the poem, "Still sits the school-house by the road, a ragged beggar sunning," and that brings back to our minds many pleasant recollections. The reason we like that poem, as you see, is because that poet made it a true picture. He knew whereof he wrote "A ragged beggar sunning." I wonder if this rural school (slide) could ever lay claim to making country life more attractive. Why, the very activities within the walls of this school rotated around the life and activities of the city and its business. Is it any wonder with boys and girls attending such a school as this—that in their hearts should arise the hope that some day they might go to the city to live and to work? I am glad to say that the people of the country are beginning to realize that it is more easily possible for them to have ideal school conditions than it is for the people of the city. The time will come when every school in the rural district as well as in the city will become the pride of the community the year around. If the school is to lay any just claim to raising the standard of home and living conditions in the community in which the school serves, it can only be because the school itself represents a higher standard than the average home of the community; otherwise, the influence of the school cannot be that of raising the standard of the average home.

My friends, this is a township high school (showing slide); moreover, it is a joint township high school operated by two townships. It is the type of school, my friends, which I believe we shall have to establish throughout the rural districts if we are going to get secondary education of equal efficiency and value to that offered in the high school of the city. You will note that there are 10,606 one-room rural schoolhouses in this State, of which 886 have ten pupils or less and 592 of which have been closed during the past ten years, partly due to the fact that many of our rural townships have actually lost in rural population, as I stated a few moments ago. I believe that either partial or total consolidation of schools will, in some measure, help us to solve the question of satisfactory, efficient rural education. I believe those of us who are from the country—and I want you to realize that in any remarks I make, I'm including myself—I think those of us who have anything to do with life in the open country will have to admit that we have come along just a little bit more slowly in the country in educational development than they have done in

the city. It takes us a little bit longer to become open minded on some things. Every farmer is from Missouri, he must be shown. I believe that is a good thing; we should not rush into those things, we should examine any new feature of education, any new line of activity, very carefully before making any very definite move toward inaugurating any new system.

May I call your attention to the fact that every slide I shall show you here this evening is a view of a Pennsylvania scene. I am enough of a Pennsylvanian to believe most heartily in Pennsylvania. I am so glad that our chief executive, his Excellency, the Governor, is trying to propagate the idea all over this State that we must love this great State of ours, that it is big enough that we can take a great pride in it. As Pennsylvanians I believe we have been rather slow to boost it, if I may be permitted to use a slang phrase. This slide shows a township high school out in the open country. In the township adjoining this there is another consolidated school where they operate fourteen or fifteen school wagons. I do not believe that consolidation is possible in all the rural districts. Partial consolidation will help us to solve some of the difficulties; in other cases, total consolidation. We have both in operation in Pennsylvania to-day. We have made more progress along these and other lines than the people of Pennsylvania are aware of. The reason is this: We are not given to boasting quite so much in Pennsylvania; just the moment we think of an idea, we don't put it into the newspaper, we try to work it out and let the works speak for themselves; that is why the people of Pennsylvania sometimes point to other states for examples in certain lines of work that have been carried on, certain educational ideas that have been developed, when right within our own borders we have had those same things for eight or ten or twelve years. I am proud to say that the views we are using to-night are all Pennsylvanian.

When we learn that the township lines sometimes stand in the way of the development of efficient secondary education, when we learn that the high school or vocational school of the open country must be a school which serves a certain community instead of a set area of land, then and only then, as I see it, will we have a school that will not only equal the good high school of the city, but, in some cases, surpass it, because we have facilities in the country, when we once learn to make use of them, that the city will never have. The joint school of the country, as it will prove to be in many cases, will give us a high school or a vocational school of such size that we may have a faculty of four, five, six or seven teachers in this particular group.

The faculty in the vocational school in one of the west central counties. In this group are three college graduates, one man trained in agriculture, a man who was born and raised on a farm and a man who has had teaching experience, a man who is a graduate of our State College of Agriculture, and two of the others were especially trained along the lines of music and drawing. We can never hope to get a faculty of that size, having the training and ability I have just mentioned, in our small, third class high schools. Splendid work has been done by the school districts in the country, don't misunderstand me; splendid work has been done in the development of the

high schools of this State but it is only a beginning, it is a step towards something else still better. This is a group of students in a secondary school of higher vocational education. Schools like this right out in the open country will make some things possible that never will be possible in any one teacher third grade high school.

It seems to me that if we are going to have well trained teachers in the country, there are two or three things at least that are vital. In the first place, we must pay such salaries that we can attract and demand well trained teachers, teachers that are trained for this line of work, prepared for this line of work. The compensation must be adequate enough to hold the good teachers, those that prove themselves to be successful; and third, we must have teaching conditions attractive enough at least to hold the teachers in the country. What the country needs all teachers who know the needs of the country, who understand conditions, who have lived in the country, who will come out in the country and live there, not board there, not stay just during the day, but who will come out and live in the community and become one of the people. I believe that is essential. There are those educational leaders who believe that in order to get this we shall have to provide homes for our teachers. That may be a disputed question at the present time; I merely call your attention to it.

This happens to represent a home belonging to a school district and the Board of School Directors have placed this home at the disposal of the principal of a consolidated school. Now there are some people who may think that in a public school the teaching of agriculture is more or less new. I want to again emphasize the fact that agriculture as it is being taught in our schools, is no newer than the need, the realization of the need for agricultural information. In 1825, there was an agricultural school established in Maine; in the year 1916 agriculture is taught in the public schools of every state; it is taught in over two thousand high schools in Pennsylvania; it is taught in twenty-one counties on a vocational basis. I realize, as well as any one else, that there is some very poor teaching in agriculture being done, that mistakes, grave mistakes, have been made in the teaching of agriculture in our schools that have brought severe criticism and condemnation upon the whole matter of agricultural education. I realize that many teachers who have attempted to teach this work have not been prepared. I also realize that it has been an almost impossible task for a teacher unprepared, having text-books not suitable for public school work—that it has been an almost impossible task for them to go into a school and do any kind of teaching along agricultural lines. But a beginning must be made, we profit by the mistakes we made more than by the successes with which we meet, and I think that Pennsylvania has profited quite largely by the mistakes made in the public schools. We are still making mistakes and probably will continue to do so.

The question of teaching agriculture on a basis satisfactory to the educators, the farmers, the boys who are taking the work, is in a process of evolution yet; we realize that. The school code of 1911 gives school districts all the authority they need, practically all the authority they need, to establish agricultural schools of various types. The vocational education act of 1913 provides specifically for agricultural departments in high schools and special vocational agricultural

schools, sometimes known as farmers' high schools or agricultural high schools. Usually in this State they are referred to as vocational schools or agricultural high schools.

You will probably be interested to know the distribution of these agricultural schools. I wish to tell you what determines the location of an agricultural department in a high school or a vocational agricultural school: First, the community must need that type of education; second, they must want that type of education; and in the third place, they must be willing to carry it on as it should be conducted. That accounts for the distribution of these agricultural high schools over the State of Pennsylvania. Some districts have been very anxious to have them. I wish to state also that there are a number of counties not marked up on this map which have filed applications with the Department of Public Instruction asking for State aid, the special State aid granted to carry on this work, and their applications are being considered at the present time. I would like to call your attention to the fact that there are but two counties on the northern tier of counties in which there are no argicultural high schools, McKean and Warren. I am glad to say for those counties that we have several requests from each of those counties. There are men in this audience tonight, members of the State Board of Agriculture, who have always stood behind agricultural education; there are members here to-night who have spoken to us with reference to the establishment of such agricultural high schools. In reading over the history of the Pennsylvania State Board of Agriculture, I was interested to find the number of times at which different members of the State Board referred to the necessity for agricultural education in the country. There are but two counties on the western frontier, Beaver and Lawrence, in which there is no agricultural high school. There is one county, Mercer county, which now has four of these agricultural high schools. Some of the states in the Union have established congressional district agricultural schools and some have established county agricultural schools. It is not necessary to explain them, because the name in each case explains the school, there being one school to each congressional district in the one case, and in the other case, one school to each county, and these schools attempt to serve the areas indicated.

But from our investigation we have found that it is impossible to serve a community of that area; it is not a community; it is simply a set area of land. In Pennsylvania we believe that secondary schools should be near enough to the people that the boys and girls of high school age can come to the school in the morning and return to their homes at night. Farmers need boys who are of high school age, and the boys and girls of high school age need their homes during that period in their lives. For that reason, instead of making large appropriations to any one school which would attempt to serve a congressional district or a county, that same amount of money is divided up into smaller portions and distributed throughout the State in small portions, each portion going to a community, so far as it is possible to distribute it.

This is rather a poor slide of a very good school, the Hickory Vocational School in Washington county. There is one man in this audience who lives within a stone's throw of that school. This is a vo-

cational school; in this school there is operated a four year course in agriculture and a four year course in homemaking for the girls; on this basis of one half of the day, the boy is with the supervisor of agriculture; the other half of the day he is in what you might term the high school; that is to say, he is studying academic subjects. He does not study agricultural subjects or practical subjects the full half day; it amounts to about 40% of his time. All boys in these vocational schools are required to take a vocational course for the first two years, getting the practical work with the academic work, not in place of it.

And, my friends, let me insert here, that this move to introduce vocational education in the rural district is not revolutionary in its character by any means, it is evolutionary, we are adding the practical work to the academic curriculum, rather than replacing the academic work. The girls are required to spent part of their time each day in vocational work for the first two years. At the end of two years, both boys and girls have the option of continuing in such a course or finishing in what might be termed an all academic course or all high school course. George Washington pointed out the fact that it was necessary in his time, and is necessary now—he pointed out in his time that a study of the soil should be made in order that its needs might be determined, in order that we might make it yield more than it does, in order that we might take care of it better. It is hardly necessary to state then that in an agricultural school we should have agricultural laboratories so fitted up that the boys in the class in agriculture might make a study of the soil. The work in the soil consists of theoretical work, if you wish to call it so. There must be some organizing of your information and that, I suppose, might be termed theoretical work. There must be some organization of that material, in order that the practical work in the laboratory and the field might not take up useless time, in order that time might not be wasted. The so-called theoretical work is followed by experiments in the laboratory and trips out into the field where the various types of soil are studied. It frequently happens, where we have these agricultural high schools located, that the boys in the class, with the help of the teacher, and sometimes with the help of the other members of the class, will make a complete soil survey map of their own home farm. As I partially explained a few moments ago, there are two ways in which an agricultural course may be added on to a secondary school in the country; either it may be added as a Department of Agriculture to an existing high school, or a complete vocational school may be established.

This slide represents a school in one of the western counties of the State. The old building on the left is the high school building; the new addition houses the Department of Agriculture in which a four year course in agriculture is given. In charge of that department is a man who devotes twelve months of the year to his work. One of the earliest schools started in this State was at Troy, in Bradford county. That school was so successful that the people authorrized a bond issue in order that an addition might be built to their high school building to properly house the Department of Agriculture. The old building on the right is the high school building. In this addition there is an agricultural laboratory, poultry room, dairy

room, wood shop and a blacksmith shop. Field trips of all kinds are taken. Various methods are employed to take these field trips. Usually the boys walk. Very naturally, in some of our high schools, it happens there are enough farmers' boys who own automobiles or whose fathers' own automobiles, that it is possible to get the use of these automobiles while making their field trips. Quite a number of very interesting trips have been taken through the counties in which these schools are located. It would be impossible for me, in the brief of this lecture, to go into details with reference to any of these trips.

Poultry raising is of course a great interest to boys. If interest in poultry raising qualifies one as a boy, I suppose most of us here are boys, because most of us, particularly the men folks, are interested in poultry raising, and there is many a man who has made a stab at poultry raising, and some of them are now wiser. All kinds of practical work are carried on in connection with the study of poultry raising. In these schools a study is made of the various methods of killing and dressing chickens to put them upon the market. After this study has been made, the supervisor of agriculture gives a demonstration showing how the chickens should be killed and dressed according to that particular method he has described. This is followed by work on the part of the boys. In some schools where we have a home-making department in connection with the Department of Agriculture, we are able to correlate the work very nicely, the boys killing and dressing the chickens and turning them over to the girls, who cook and serve them. The boys correlate again on eating them.

This is a group of boys in one of the first departments we established in Erie county. The town of Waterford, in Erie county, has a very live poultry association and conducts a poultry show. These boys are interested and desired, when the time came, to submit some birds, and they did. In the shop work they built every one of the coops shown on this slide with the exception of one which was the model from which they made their own. They also had an agricultural exhibit. Mr. Wittman of the State Board of Agriculture, visited this class and took the boys on a tour of the town. He visited a number of the chicken pens of the town by daylight and gave the boys a number of very valuable hints on the subject of poultry. Farm forestry is also one of the subjects of the four years' course in agriculture in these schools, not forestry as a profession, but farm forestry as applied to the farm. It seems to me that any boy, that every boy has a right to expect that his school shall train his hand as well as his head. That is particularly true of the boy in the country. I believe we make a mistake when we train the boy's head alone. In order to give the boy an all around development, I believe we must make provision to train his hand and his head and his heart. Blacksmithing is a part of the four years' course in agriculture. Woodworking of various kinds—this happens to represent a class in rope splicing. The boys take a keen interest in this work. Harness repairing, as it is practiced on a farm, is also taught in these schools. The boys are taught how to use tools, how to take care of tools, they are taught the various processes connected with the use of tools. The work which they do is not the manual training of to-day, good as that

is, but it is what you might term applied manual training, it is applied shop work, it is what we like to term farm shop work. The things the boys make while they are learning the use of tools and the processes involved in using the tools have some direct bearing on the working of the agricultural course, some direct relation to home farm life. These boys built this colony house. There is a correlation between shop work and poultry raising.

It is hardly necessary to point out that a four years' course in agriculture would be incomplete without a study of farm crops. This one slide will give you a very slight idea, a brief glimpse only, of a part of the practical work carried on in connection with the work of farm crops. These boys are looking over the result of a germination test of corn. The boys are taught how to select and store corn and carry on the germination test. These boys, in connection with their work in vegetable gardening, planned out, drew the plans of and made a hot-bed and planted therein certain vegetables. Here you will note them glazing the sash; they made and glazed the sash. Perhaps that is hardly a very practical exercise, because as a rule a man buys his sash rather than making and glazing it, and yet for one illustration perhaps there was no valuable time lost. This second slide shows them completing the hot-bed. This again is correlation between the farm shop work and the vegetable gardening work. Dairying is a very important industry and in many of our counties if the teaching of agriculture in our schools is going to be of value, it is because it is practical, it is because we are teaching the boys to work with things rather than to talk about things. This means that it will be necessary for us to have, as we do have in these agricultural schools, it will be necessary to have laboratories fitted up with dairy apparatus; it will be necessary to make frequent trips to dairy farms.

This slide explains itself. I think you will realize that it will be impossible for me to give you more than a glimpse into the various utilities of these schools. The one thing I want to leave with you is this, that an attempt is being made to make the work through and to make it practical, to connect up the work of the school in a very definite way and in a practical way with the work of the home and the work of the farm. Every boy who takes this four-years' course in one of these agricultural high schools must each year carry on an agricultural project. This is another illustration of the attempt to connect up this work with the home and make it practical. This boy chose a poultry project. He hatched out as many eggs as he could from the eggs you see there. He selected the male birds and caponized them and in the fall he put on some very healthy specimens of capons. The boy received a great deal of valuable information in connection with this and received some financial remuneration.

This boy is a freshman in a small agricultural high school and decided that he would like to grow some tomato plants. He was very much interested in tomatoes. He planted fifteen hundred tomato plants, or secured that many from the number of seeds be planted, and transplanted them and took care of them. Every boy who carried on an agricultural project under the close supervision of the supervisor of agriculture, must keep a daily record of everything he does, his expenses, the work that he puts on, the methods that he employs, in order that he may learn some lessons thereby. From that record we

know that this particular boy went out one night, on the night of the fifteenth of June; it happened in that year and covered up this many of his fifteen hundred tomato plants with newspapers to protect them from a frost which his daily record shows came that night, a very heavy frost. His father did not cover his plants up and lost many of them. This boy bought for himself a canning outfit and later in the Summer a second outfit, because he was so successful in canning these tomatoes and other vegetables; he put his own brand of canned corn, tomatoes and beans upon the market, and at the close of the season he had not only had a kind of work that kept him interested and out of mischief, but he had also cleaned up the tidy sum of $130.00. It seems to me that there is value in that.

May I call your attention again to the fact that the supervisor of agriculture in these high schools is employed for the year around? He stays there during the Summer and visits these boys as frequently as possible for the purpose of giving them instruction in connection with their agricultural projects. Now, my friends, we have learned how to feed the hen; we have learned that the hen is an egg factory on legs—I came near saying on wheels; we have learned that if we want to make a hen produce eggs, we must feed that hen those materials which make eggs and those elements which will also carry on the body functions of the various organs in that hen. We have that down to a science. Mr. Wittman, of your own State Board, has told the people of this State many interesting things. We know that we can feed Lady Eglantine, of whom you have all undoubtedly heard, an exact ration, which will make her lay eggs without any eggscitement, and may perhaps make her a little eggotistical. (Laughter). We have learned, my friends, how to feed this happy family to keep them happy until the day of reckoning comes. We have even passed some laws providing for their comfort when traveling. I say we have learned how to balance rations for chickens; we have learned how to balance the rations of hogs so that we can make them take on the greatest amount of fat with the least possible expense and the greatest profit to us; but the thing that we have left to the last, the thing we know the least about to-day is the balance ration for the human individual.

Oh, I know there are people here and those who have made a study of this. I know that a wonderful start has been made upon it, but I mean that as a people we know little or nothing to-day about the science and art of right living, my friends. Our mothers were good cooks, our wives are good cooks—many of them; but these wives of ours and we ourselves know little or nothing about the balance ration we ought to eat, the ration which will enable us to keep in good health, to perform the work we want to do; we have left that until the last, and I believe the reason is because we can see some financial renumeration in feeding the hen a balance ration or in feeding the hog or the steer or the dairy cow; we can see how that touches our pocket-book, and for that reason we immediately get busy and make a study of that. It does not, at first glance, seem to touch our pocket-books quite so soon, the feeding of our boys and girls and ourselves, and we have left that until the last, but I am glad to say that we are making a start in this country and Pennsylvania is keeping step with the other states along this line. I know there are some here

and there, some mothers, some good mothers, and some good fathers of girls like these who say that it is unnecessary to teach girls how to cook or how to sew, but, my friends, if you would make a careful survey of the conditions in this State and find out just how many girls, sixteen, seventeen, eighteen and twenty years of age to-day know anything or much about cooking, I'm afraid you would be sadly disappointed. The slides I have just shown you are views in our agricultural high schools. This is not a view of a dining-room in some mansion in the city; this is the dining-room in the home-making department of the Hickory Vocational School in Washington county. We have several others just like it. Don't get the idea that extravagance is being taught there; the very opposite is true—plain simplicity. The girls enjoy work of this kind even though there were some doubters at first, but even these doubters became earnest believers after a while. I could show you many views right along this line, but just one or two more is all I have time for, just to give you some idea of what we are actually doing in Pennsylvania. We have been at this three years; we have been at it longer than that in the teaching of Domestic Science, but we have been at the teaching of agriculture on a vocational basis in the great State of Pennsylvania for three years and we have been saying very little about it.

Some one has made a study of the process of carrying bricks from the ground up to the scaffold, and the man who made that study discovered that, simple though that operation is, yet a study of it will make possible the simplification of the operation involved in putting the bricks in the hod and the hod on the man's shoulder and the climbing of the ladder and the dumping of the bricks on the scaffold. This study enables a man to perform more work during a day with less fatigue to himself and greater profit to his employer. I am not so sure but what the simple process of laundering, if you wish to call it simple, might not stand some inspecting in some things; when I examine some of my shirts that have come from the laundry, not those that have been done at home, I am glad to say, but those that come from the hands of other people, I feel that the business of washing and ironing would stand some little inspection. Now my friends, I believe there is no reason why, just because you and I are beyond the school age, just because we have passed certain milestones in life, that the doors of the public schools should be closed to you and me. I believe you will agree with me that we know now the value of an education better than we did in the days when we were receiving the education and training that the school offers. I see no reason why the expensive school plant, which is the property of the public, should be closed so many hours in the day, so many days in the week, so many weeks in the year, or why it should be closed to those who have passed beyond a certain age. I am glad to say that we have been able to find some way in which the school plant could be of more service to the entire community in these agricultural schools.

This particular slide represents only one particular phase of the increased service that these schools attempt to give. You will notice on the next to the top shelf and the shelf just below that there are bulletins issued by the United States Department of Agriculture,

by our own Department here and by our own State College Experiment Station, all classified and on file ready for instant use by any farmer served by that school whenever he wishes to ask for it. This slide explains itself. In many of our agricultural schools, particularly those that have been established for at least a year, we are conducting what we are pleased to call farmers' night schools and night schools for farmers' wives. These have been very successful. This slide represents a group of farmers in attendance at one of these night schools in one of the small agricultural schools. I emphasize the fact that this is a small school, because I wish to show that, even though the school may be small, if it has the proper facilities, the teaching force and equipment, it can serve a large community. In this particular night school there were ninety-six farmers enrolled. The evening on which the photograph was taken was a very rainy evening; the roads were almost impassible, but there were ninety-six farmers enrolled in the night school. The night school wound up with a two days' farmers' institute, I think they called it in that particular case, and I wish to say here that the State Department of Agriculture and State College have been co-operating most splendidly with our leaders in these agricultural high schools. I believe it is the beginning of a better day, as far as co-operation between agricultural agencies in this State is concerned.

I believe that one of the biggest opportunities of the day, as far as agricultural development in Pennsylvania is concerned, is the opportunity of bringing about a closer articulation between the agricultural agencies of the State in order that they may work in closer harmony. It will be a great day for Pennsylvania when some man works that problem out; it will be a great day for every agricultural force in the State, my friends. We are beginning along that line in these agricultural schools. The men of the State Board of Agriculture and farmers' institute speakers come to our agricultural high schools and deliver addresses. State College sends its men there. This illustrates the way in which the school sometimes reciprocates, furnishing a part of the program. The girls in this particular home-making department gave a demonstration for the benefit of the farmers and their wives.

Now what are we to expect from this agricultural education in our schools? Whenever any boy raises an unusually large crop of corn or an unusually large crop of potatoes, immediately his name gets into the newspaper, he gets considerable publicity. I am not so sure that that is wrong; I believe that is a good idea. Sometimes we overdo it, perhaps, but the harm that may come from this is that it may lead some of us to believe that the real purpose of agricultural education in our public school is the production of large crops. I am not saying that these are illustrations of what the boys in our agricultural schools are producing. Undoubtedly the boys who take strawberry projects may increase those and get larger strawberries. They say that two heads is better than one, even if one is a cabbage head; I presume that would be true in this case, but, my friends, what is the real purpose in the introduction of agricultural education into the public school? I tell you, my friends, it is the boy and not agriculture. The development of agricultural conditions, the improvement of agricultural conditions, as important as it is and as necessary as it

is in some sections of the State, is a by-product, my friends, it is a by-product only of the work of agricultural education in the public school. It is the boy that is the key-note of the whole thing, and not agriculture. Agriculture is a mighty important by-product; agricultural education in itself would be impossible without the necessity for the development of agriculture, but it is not the production of greater crops or better crops, it is the development of this boy, it is because we wish to give this boy the type of education that he ought to have. That is why agricultural education has been introduced into the public schools.

May I refer to that slide once more? I trust you have carried it in mind; there are eleven boys in that class, in this particular school represented by this slide. They usually graduated two or three boys each year. This was a class of boys belonging to the junior class; there are eleven boys in that class, not all in the picture. Nine of those eleven boys were taking the course in agriculture in that high school; eight out of those eleven boys were over six feet tall. None of the boys in that class were less than five feet ten. The one boy in the center of the picture was a boy imported from another class merely to give you an idea of the size of the boys in the class. Why do I mention that fact? Here is the reason; we must set some standard or some gauge by which we can measure the efficiency of this type of education; we realize that. If we succeeded in holding those boys who would otherwise have dropped out of school, who would have received no high school education, it seems to me that we have done one thing to justify the introduction of agriculture into the public schools in rural districts. Again, may I refer to the fact, that previously this school graduated two or three boys only? In this class there are eleven; eight of them are over six feet in height; this shows that we are able to attract older boys, more mature boys, who would have dropped out of school if it were not for the practical work there offered. I think Luther Burbank has put it very nicely when, in urging men tho stay upon the farms and engage in plant breeding work, he says, "The time will come when more men will do this; the time will come when men's thoughts will be turned away from destructive war and will be turned to higher things, when man shall offer his brother not bullets and bayonets, but richer fruits, better grains and fairer flowers."

The CHAIRMAN: Ladies and Gentlemen, Members of the State Board of Agriculture; I take pleasure at this time in turning the meeting over to your President, Governor Brumbaugh, who will introduce the next speaker. (Applause).

(Governor Brumbaugh takes the Chair).

GOVERNOR BRUMBAUGH: Ladies and Gentlemen: It is an auspicious hour in the history of Pennsylvania when the good people gather to consider any question that has to do with the development of our agricultural interests. We are peculiarly fortunate to-night because one of our own educational experts has already addressed you on an important problem, and we are now also fortunate because we are honored with a visit from a distinguished member of Con-

gress, from a neighboring State to the West, who has been in the past a member of the Committee on Agriculture in our National Congress and is now a member of the Commission of Banking and Currency, and who has been sent abroad to study the problem of Foreign Loans and Markets in all the important agricultural centers of the world. I think I may safely say, and I think I may modestly say, that Hon. Ralph W. Moss is probably the best informed man in the United States on the subject upon which he will address you to-night. I have very great pleasure in introducing to you Mr. Moss. (Applause).

Mr. Moss then delivered the following address:

"RURAL CREDITS."

By HON. RALPH W. MOSS, *Centre Point, Ind., Member of the National Congress*

Mr. Chairman and Gentlemen: I wish to express frankly the pleasure which your very courteous invitation gives me. I feel it an honor to be permitted to discuss some of the great problems which lie before us. But this sense of esteem is enhanced to any Western man when his invitation comes from one of our parent states in the Union. I come far enough from the West to have been born amid pioneer conditions. I have seen the splendid farm civilization of our State spring into existence. We have improved our highways; builded modern residences; founded churches, universities and schools; and our lands have risen in value nearly to the level of European countries. Thus, in a generation, we have grown wealthy and have surrounded our families with all the comforts and many of the luxuries of life. Many factors have contributed to this wonderful growth and progress; but chief among them (and the only one I will name tonight) has been the aid and assistance which has been given us by the states east of the Allegheny Mountains.

The first farm journals which came into our homes were published in your cities; the best blood in our domestic flocks came from your herds; our orchards grew from your nurseries; our gardens were planted with your seeds; and the improved yield of our field crops was due to the improvement which your masters had wrought in our seed grains. Thus we owe to you our political liberty as a nation and our present splendid position in American agriculture.

I use the term "splendid position" advisedly and with due consideration. I have come tonight to urge certain legislative measures which, in my opinion, will enable us to strengthen our economic position as a nation by perfecting a better organization among farmers; but in our zeal as propagandists for these new measures I trust we may not forget the many exceptional advantages which we now enjoy. I have often asserted and feel free to repeat tonight, that farmers in the United States now enjoy greater advantages than any generation of men since Abraham pastured his flocks on a thousand

hills. I refer of course to the splendid markets of our nation; to the well developed system of railway transportation; to the good roads which have been builded in so many sections of our country; to the improved seed grains; to the vast improvement in livestock; to the wide diffusion of scientific knowledge of agriculture among our people; to the trained leadership in agriculture and to the blessings of self-government. No other generation of farmers enjoyed at one time so many of these advantages which go to produce wealth, peace, happiness and prosperity among the great masses of people in any nation. It is fortunate for the world that the present moment finds the American farmer so happily situated. We are facing one of the great crisis in the world's history. The world is today looking to us for food and clothing in a greater degree than at any time in history. These imperative demands must continue for a generation; and if extreme privation, hunger and even starvation in the world at large is to be averted, it must be through the industry and the intelligence of American farmers. We are facing a great opportunity; but we have also a mighty responsibility. It is these grave considerations which make the present movement for a better organization and a more productive agriculture in America not only of national but of world wide importance.

Your invitation was to speak on Rural Credits. I take it that this invitation was extended because of my connection with the preparation of the bill now pending before Congress and which is ordinarily taken to be the basis of legislation on this subject. I refer to H. R. No. 6838, and presume that you will expect me to discuss the terms of this particular bill rather than to attempt an address along general lines. I beg to say, in passing, that it is vastly easier to present ideal results which you hope may flow from a measure of legislation than it is to construct the actual statute. It is likewise easier to present criticisms against a bill, to give way to the fear which is always present, than it is to suggest other provisions which will accomplish the desired result and avoid the evils complained of. I am fairly well acquainted with the literature on this subject and have read much of what has been said and written by many who pose as authority on this subject, without finding any helpful suggestions to those whose duty has been to frame this legislation.

We desire legislation which will be national in its character and which will go into operation under favorable conditions in all parts of the nation. It is especially desirable to secure as uniform a rate of interest as possible and to reduce that rate to as low a degree as the economic conditions of the nation will permit. It is likewise desirable to encourage farmers who are now in debt, to fund that debt in long time obligations on terms which are tantamount to a savings investment. It is the experience of the world that only those who are enabled to save a part of their daily income ever become financially independent. It is in this sense that policies in endowment life insurance and shares in building and loan societies give financial independence to their holders. We seek to extend these advantages to the farmers who are in debt for their farms or who desire to borrow money to improve them. Such results are only possible by an investment made under an organization, controlled by competent men, supervised by law, and in volume of business large enough to invest

small savings to the best advantage. This suggests co-operation, as a business method. We seek to create a system which, when fully organized, will include farmers from every section and every neighborhood in the nation. In the aggregate, the volume of business will be very large; the cost of expert management will be correspondingly small. Thus the individual farmer, though his business will be comparatively insignificant, will be given every advantage of a stockholder in a large corporation, officered by experts. His mortgage which is ordinarily an extreme burden is changed into a long time lease on a tract of improved real estate which, through his labors, will yield sufficiently to pay him remunerative wages and to meet his liabilities, so that he will enjoy the benefits of proprietorship with a reasonable certainty of attaining a title in fee to his holdings.

These results require a national organization and national co-operation among American farmers. The very territorial size of our nation suggests many difficulties. The many different state laws as to land titles and the exemptions from debt makes the problem a difficult one. The independence of the American farmers, many of whom are in fact, real pioneer settlers, adds to the difficulties of framing a general statute which is applicable to all parts of our natural territory. It is but little wonder that we have spent more than two years in arriving at a satisfactory solution of this subject.

I am well aware that there is a wide spread interest in personal credit aside from mortgage credit. It is said, and truly too, that our landless tenants need especial assistance in the way of necessary credit. The bill under consideration deals only with mortgage credit; but before I begin a discussion of its terms and conditions, I beg to refer briefly to our new banking and currency law, commonly known as the Federal Reserve System. It is well known that farmers are charged high rates of interest in many sections of the United States on personal loans. The Comptroller of the Currency, Honorable John Skelton Williams, has publicly called attention to some of these usurious rates. He has given instances, taken from the actual bank records, which are nearly unbelievable. For instance, he mentions one case where a woman paid 120% interest on $110.00 which was borrowed to purchase a horse. Many individual loans are instanced where the rate of interest runs higher than 100%. I will not lengthen my address to repeat his examples. His address before the Kentucky Bankers' Association can be secured upon application to the clerk of the Commission on Rural Credits at Washington. It is well worth reading by any student of this subject. It naturally brings up the subject, "What influence has our new banking law had upon the situation so far as it affects loans to farmers for short periods of time?"

No student of the subject will admit that the present system is fully organized and has as yet exerted its full measure of benefit to the farmers. We have had, however, sufficient actual experience to know that without supplemental legislation, the system will not be able to help agriculture to the full measure of its possibilities. Every modern system of personal credit—rural or commercial—is based upon the power of the government to issue money or certificates of credit. The volume of money available under such a system is increased by the government rediscounting notes held by banks, or loans by the bank of issue to the borrower. Thus in times of stress both the

volume of money and the rate of interest are controlled by the govern ment bank of issue. It has been declared by the present Board that its policy will be to grant to agricultural paper—paper secured by warehouse receipts representing agricultural products—a preferencial rate of interest. The rate under present conditions, on this class of paper is three per cent. This rate is as low as any foreign government has ever given to its farm citizens. Last year, we grew nearly ment has ever given to its farm products. If these products had been properly classified and warehoused, this immense value would have been available as collateral security at this very low rate of interest; and these commodities were in actual ownership and control of our farmers. The Southern farmer was able to take a limited advantage of this rate because, under the law, the Department of Agriculture supervises the grading of his cotton. This is done under the Cotton Standard Act. Of course, it is but a beginning. Neither the banks nor the farmers fully understood the possibilities which lay before them. Then, too, the banks were afraid to encourage this low rate for fear of the effect it might have on their commercial business. There was, however, several million dollars of rediscounting done by the Federal Reserve Banks at the three per cent. rate. This business is sure to grow by leaps and bounds as education spreads among the planters of that section.

The same opportunity is open to the Northern farmer as soon as we can secure a law standardizing our farm products as cotton is standardized. I had the honor to introduce the Moss Grain Grades Act in the last Congress. It passed the House by practically a unanimous vote but failed in the Senate. I have reintroduced it in the present Congress and it is number 4646. Mr. Lever has introduced his Warehouse Bill. The bill also passed the House during the last Session but failed in the Senate. The Grain Grades Act authorizes the Secretary of Agriculture to fix uniform standards of quality and condition for all principal commercial grains and to supervise and enforce their application in the grading of all grain offered for sale. The Warehouse Act authorizes the Secretary of Agriculture to license and to bond warehouses open to all producers of farm products who may care to store them therein. The government will have supervision of all operations of warehousing, grading the products, and issuing the receipts. If these two bills were in force, any farmer in the Union could take his surplus farm products, have them graded according to government standards and store them in warehouses supervised and bonded by the United States. He could then take his receipts to the nearest bank and get a lower rate of interest than is given to any other class of paper. If farmers were to organize a co-operative bank, it would be entirely possible to secure money at three per cent. less only the overhead charges of operation. These two proposed laws must be enacted if we are to secure the full benefit of own new banking law. If farmers will organize and demand the passage of these measures, they will be enacted into law. It is the open door to cheap credit; it is a certain method of securing three per cent. money to finance our farming operations, and if we press forward along these lines, we will secure for ourselves as low rates on personal farm loans as any nation has ever granted to farmers for like purposes. Can we ask for greater results?

I have thus briefly referred to personal credits not only as an answer to the criticism that nothing is being attempted to improve present conditions, but also to call your attention to the very broad comprehensive legislation program which is before Congress at this very moment. I confidently assert that these three measures, the Grain Grades Act, the Warehouse Bill, and the Mortgage Credit plan, taken together, constitute the most important legislation affecting agricultural interests that has been introduced in Congress for a generation.

I have spoken briefly of the purpose of rural credits and some of the difficulties to be overcome in framing legislation to meet our conditions. The present bill, H. R. No. 6838, creates a national system of mortgage banks to be operated by a federation of farm borrowers, organized as a co-operative association. It also authorizes a separate system of mortgage banks, organized as corporations and controlled by private initiative. These two systems are separate and distinct; nowise antagonistic but everywhere competitive. In practically every other country of the world, mortgage banking has been successfully organized under each of these plans. They bear the same relation to each other as the mutual and old line insurance companies. The provisions of the bill do not give any special advantage to either plan but seek to permit their organization under the most favorable conditions. The entire system is put under the control of a Farm Loan Board, consisting of five persons appointed by the President and confirmed by the Senate. Not more than three members of this Board may be chosen from any one political party. The members are appointed for a term of ten years and are paid a salary of $10,000 per year. It is the purpose to secure high grade, competent men, giving them ample power under long tenure and freeing them from political control. This Board organizes the new banking system and when once in operation, exercises supreme control over its functions. This Board is given power to divide the United States into twelve banking districts and to organize a land bank in each one of these districts. It is the purpose of the bill, as the system grows, to increase the number of land banks, until ultimately it may be that there will be a land bank authorized for every state in the Union. The number twelve was chosen to correspond with the Federal Reserve system, but ample provision has been made for the organization of new districts, whenever, in the opinion of the farm Loan Board, such action is necessary. These land banks must each have a subscribed capital of at least $500,000 before they can begin doing business. This capital may be subscribed by individuals, corporations, municipalities, or the government of any State; but in case it is not subscribed through these sources, then the Government of the United States is obliged to make such subscriptions.

At this point we reach the moot question of government aid. From the very start I have been opposed, personally, to those extreme measures of government guarantee of the bonds or a direct loan to borrowers by the government. It is practically impossible, however, to found a co-operative system and put it into actual operation throughout the nation unless some good angel will advance the initial capital. If this capital is sought to be secured by the issuance of shares of stock, either the holders of these shares must forego dividends or

else the system can never become purely mutual and thus grant loans to its members at the lowest possible rate of interest. We have no such spirit of altruism in this country as would make it reasonably certain that foundation capital could be secured from private sources without the pledge of dividends. Thus the only practical way of organizing the system is to ask the government of the United States to advance temporarily the foundation capital, to be returned out of the subscriptions to capital stock which will be made by the borrowers under the plan of the bill. I am glad to be able to say that this happy compromise has been accepted by those who framed this bill and I express the hope that it will be equally acceptable to every advocate of this legislation. This provision makes it possible to organize a co-operative system which is owned and controlled by the borrowers themselves and a system where all the net earnings go as dividends to the borrowers in proportion to the face of their loans, thus giving them service at actual net cost.

These land banks do not have the power to negotiate loans directly with the individual. It will be seen at once that a land district which may compromise several states is too large a district to be assigned to any one institution transacting a business which requires it to gain an accurate knowledge of the value of many widely separated tracts of real estate and become acquainted with the personal character of thousands of individual borrowers.

In order to extend this organization and bring it close to the homes and lives of the borrowers, the land bank is required to conduct its business through local loan associations which are to be organized by farm borrowers in every neighborhood of the nation. Ten or more persons may organize such an association, each member, however, owning land and desiring to become a borrower in the system. Every member of the local association must subscribe for stock in the local association equal to five per cent. of the face of his loan, and the local association must make an equal subscription to the capital stock of the land bank. Thus the capital of the land bank grows in proportion to its volume of business, always bearing the ratio of one to twenty, and except the original subscription of $500,000, all stock of the land bank is held by the local association in trust for their membership. Whenever a member pays off his loan the land bank pays back at par his subscription to the capital stock and cancels his shares. This act severs his membership in the local association so that none but borrowers can belong to the organization. All voting power is held by the members of the local association. Thus the whole system is democratic and is controlled by the men who are acually borrowing money from the land bank. The local association passes upon the character of the borrower when he applies for membership in the association, and through its loan committee, makes an appraisal of the land which is offered as a basis for his mortgage loan. This appraisal and recommendation from the local association is forwarded to the land bank together with an application for the loan. The land bank sends an appraiser to re-appraise the land. The appraiser is an officer of the government and his salary is paid by the land bank. The report of this appraiser fixes the value of the land as a security for a mortgage loan which cannot exceed 60% of the

appraised value. The land bank sends the money to the association and the association pays it over to the borrower. Likewise the borrower makes his several payments to the local association which forwards the money thus paid to the land bank.

The local association is but an agent acting for the land bank to secure accurate and intimate knowledge of the land values and personal character. Each borrower insures his own loan to the extent of five per cent. of the amount of the loan. We have every element of safety; local knowledge, mutual liability, and self interest. The land bank, as the mortgages accumulate, deposits them in amounts not less than $50,000 with an officer of the Farm Loan Board called the registrar. These mortgages are held in trust by the registrar as special security against an issue of bonds. The Farm Loan Board causes an appraisal to be made of these mortgages and issues permission to the land bank to issue bonds. There must always be an amount of unpaid mortgages on deposit with the registrar equal to the par value of bonds outstanding; and as mortgages are paid off, either in whole or in part, these sums must be reinvested in farm mortgages, or farm loan bonds must be purchased in like amounts and cancelled.

The success of any mortgage system must depend upon the ready sale of bonds. Not only are the loanable funds secured by the sale of bonds, but the rate of interest on farm mortgages is fixed by the rate of interest on the bonds. The whole system of mortgage banking is devised to enable the farmers of the nation to pool their assets, and by issuing bonds, to borrow money at low rates of interest. A successful system will thus not only secure money for farm borrowers, but it will develop a safe investment for the surplus earnings of the nation. It seeks to cause money held for investment to flow towards the farms and thereby develop a mutual financial relationship between industrial centers and agricultural territory. This requires an attractive credit instrument. Every bond issued by a land bank is freed from all forms of national and local taxation; it is secured by a first mortgage on improved real estate which is worth at least twice as much as the face of the bond. It is further secured by the capital stock of all the local associations in that land district. It is also secured by the capital stock and reserves of the land bank which issued it; and finally it is secured by the assets of every other federal land bank in the United States. The value of such a bond cannot be doubted. As long as the rains fall and the sun shines, as long as the promise of a seed time and a harvest continues, and so long as man must derive his food and clothing from the soil, such a bond will stand as the safest investment on earth.

The land bank is permitted to charge borrowers one per cent. higher rate on mortgage than the bank pays on its bonds. This represents the income of the bank out of which expenses are to be paid, reserves builded, and dividends declared. It may be in actual practice that this margin will prove to be too high and will be much reduced. This point is not of much importance one way or the other. If the income of the bank is greater, the dividends paid to the borrower will be higher, because all surplus earnings must be distributed to the borrowers. Loans are made for only certain purposes, within certain specified amounts, and for certain periods of time. These limitations are written in the bill in order to kill speculation.

The United States has not as yet passed through its speculative period. In some sections of this country the value of land is rising faster than the legal rate of interest. It is not the purpose of this bill to help the speculator, but to assist the farmer to own an average sized farm and to improve and equip the same for productive agricultural purposes. Therefore, loans are denied to any one who will not actually cultivate the land he proposes to mortgage, and who does not desire to use the money either to purchase a farm home, to improve his land, to purchase live stock or to cultivate it. No person is granted a loan less than one hundred dollars or more than $10,000. It is believed that these restrictions will not work actual hardship on the great mass of farmers who will apply for loans; and on the other hand that they will prove an effectual bar to speculation. Thus the whole benefits of the bill will go towards the development of our agriculture, to the building of new farm homes, and to the founding of better flocks and herds. Loans are made for a period of not less than five nor more than thirty-five years. These loans are made re-payable in fixed semi-annual installments so that all payments are of equal size and include both interest and principal.

This method of repayment is known as amortization. The reduction in the debt is computed according to the principles of compound interest, so that the borrower not only reduces his debt in the amount which he actually applies on the principal, but he also receives interest upon interest. He is given every advantage of an investment in a savings institution which is officered by competent and skilled financiers. It will thus be possible under the provisions of this bill to borrow money on mortgage security and repay it, principal and interest, at a lower rate than farmers even in the most favored circumstances are now being charged interest alone. To illustrate this: When I was in Europe, farmers were repaying their loans at an actual rate of 4.85 per cent., which rate of payment included interest, principal and administrative charges. This rate, at the expiration of the period extinguished the debt. I will now make a confident prediction that when this law goes into effect, and becomes fully established, that the farmers of Pennsylvania will be able to borrow money under its provisions at a rate of five per cent. which will extinguish interest and period within the period of thirty-five years. The loans granted are unrecalled by the bank and need never be renewed and cannot be foreclosed if the contract payments are made. The borrower, however, is given the right to pay off his loan in whole or in part at any interest period. Thus, no borrower need be afraid to contract for a long period of time because he can anticipate payment at the close of any six months periods. This works no hardship upon the bank because it can either loan the money to some other farmer, or can sell in its bonds and pay them off.

I have noticed recently in the public press certain prominent individuals, one of them a president of a life insurance company, attacking the amortization feature of the bill and claiming that the American farmer does not desire the privilege of long time loans. This is but an indirect and insiduous attack upon all methods of rural credit loans. The very strength of the system lies in the fact that the farmer is given an unrecallable contract running over a long period of time, reducible according to the earning power of compound inter-

est, and in individual payments small enough that they can be met out of a moderate share of the farmer's income. He thus escapes the slavery of debt; he avoids imposing privations upon his family; he is enabled to live, to educate his family and to pay for his farm. He is thus a home builder during the period in which he becomes a home owner. The man who seeks to destroy the amortization feature upon mortgages or to discourage legislation authorizing it, has no right to pose as the friend of the farmer or to speak for the progressive element in American farm life.

I have given the main outline of the co-operative features of this bill; however, I have not mentioned the principle of unlimited liability. There are two classes of loan associations authorized in the bill, one with limited, the other with unlimited liability. Just as the bill does not favor unduly either the mutual or the corporate plan of mortgage banking, but seeks to permit either to be organized under the most favorable conditions, so does it give preference to neither limited nor unlimited societies. It permits either to be organized under conditions most favorable to their success. It is my opinion that the loans will be made under one form just as cheaply as they will be under the other. There has been much criticism and I may say loose talk indulged in discussing the principle of unlimited liability. As that principle is applied under the terms of this bill, I do not believe that the individual farmer who may join such an association would incur any greater actual hazard than though he were holding a membership in an association with limited liability. I am aware that he assumes a greater legal or technical liability, or you may put it, a greater contingent liability; but safeguarded as it is, his full contingent liability can never develop into an actual liability which he will be called upon to measure in dollars and cents.

Certain criticisms have been made because the stockholders in the limited associations incur a credit liability equal to five per cent. of the face of ther loans. Such critics may pose as the friends of the farmer, and may actually succeed in persuading some farmers to accept them as such; but the fact is that this is a business association; it is neither altruistic nor charitable. Co-operation, as a principle, seeks only to benefit its own members; it has no regard for the interest of non-members. It seeks to enable its own members to save; to transform savings into foundation capital; and through the earning power of capital, to give them financial independence. The members who own a co-operative association secure all the earnings of that association and in terms must assume all the risk of the business. The experience of the world is that under a well managed, honestly conducted and thoroughly supervised system of mortgage loans, there are no appreciable losses. And where there are no appreciable losses, there can be no large contingent liability. It is the exercise of good common sense for an association of borrowers who seek to secure money at low rates, upon favorable terms, to offer a security against which there can be no possible doubt. This is the only reason that capital stock is required and that credit capital is assembled. The five per cent. which the farmer subscribes to the capital of the land bank is not the money which is loaned out to his neighbor, but is a fund which is held as a guarantee and is invested in safe and attractive securities. The income upon it is sent back to the owners in the shape of annual or semi-annual dividends.

The only instance where this fund can be drawn upon by the bank is where some borrower defaults in his obligation and the association is unable to collect his obligation at law. In such an instance, the loss would first fall on the individuals and then would be distributed equitably among his associates in business. The person who seeks to encourage farmers to go into an organization whereby they are supposed to gain all the rewards and some other man shall pay all the losses, is either dishonest with himself or is trying to deceive his followers. It is an apt case where the blind is attempting to lead the blind.

GOVERNOR BRUMBAUGH: I think you will join with me in expressing our sincere thanks to Mr. Moss for this very interesting, informing and lucid address. If that is the type of men they are bringing up in Indiana on the farms, we had better look to our seed in Pennsylvania. It is a real pleasure, Sir, to have had you here, and on behalf of this great body of representative citizens, I thank you again and again. Is there any further business before the body tonight? If there is nothing more, the meeting stands adjourned.

January 27, 1916, 9 A. M.

Vice President Fenstermacher in the Chair.

The CHAIRMAN: The meeting will please come to order. We have this morning reports of Standing Committees and Specialists, continued, and first on the program is the report of the Ornithologist, Dr. Joseph Kalbfus, of Harrisburg.

DR. KALBFUS: I do not know why I was selected as Ornithologist; but I am going to make a slight report on the value of birds and the failure of the farmers to do what they ought to do for the birds. Then I am going to touch for a minute on predatory birds and insist that there are lots of such birds all around us that were not raised in nests or tree tops and never wore feathers.

I listened to an address last night on how the farmer is to proceed, how he has got to put his corn in and get money on it and all that. But he has first got to raise the corn, he has first got to get a crop, and the subject I am going to talk about, through which I believe that the man engaged in it is injured and bled to a greater extent that anything on the farm, and that in the dairy business you can raise your cattle, have your buildings and give them all the care you please, and when the time comes, you come to the creamery or some place else and your profit is all taken. It is foolish for us to sit here and talk about it and then do nothing. I am interested in a

farm up in Bradford county that came to me through inheritance—my wife's part owner; it is my unfortunate problem to run it. I get about 2½ cents for the cream that is found on a quart of milk. I get the skim milk back sometimes, sometimes some other fellow gets it, and it is not fair to the producer and there is no use to beat around the bush; you are here to do something to better conditions, to better your own condition and to better the farmers' conditions in this State, and the sooner we consider these things, the better it will be for all of us.

My article here is entitled, "Who is neighbor to the birds?" It is well enough for the farmers to talk about what they are doing for the birds, but when you come right down to the proposition of what you have really done, it is nothing. The fact that a farmer permits a covey of quail to feed on his land, that is, that he don't chase them off, is one thing, but to do something for them in the time of need is another thing. Our quail in this State are almost gone. I have been trying in the past number of months to secure quail from Mexico. I sent an agent to Mexico at the expense of the sportsmen; I expected to have introduced in the State at least ten or twelve thousand or more quail; day before yesterday I got a wire from Washington stopping the shipment of quail because they had a disease called Coxidosis, that is extremely contagious and almost always fatal. I had one importation of about 175 come in to New York about four weeks ago; there's 16 of them alive to-day. I had another importation that came in three days ago, and 77 of those died the first day. The intestines are covered with ulcers and the liver with white bloches that is infectious to the extreme with quail. It does not apparently affect other birds, and the time has come, as I said in my last report to the Commission, that if we are going to preserve the quail, there must be a closed season, and that does not mean simply that the farmers are going to go along as they have done; the farmers are the ones that are really interested, and I am going to touch on this subject in this paper.

I am going to just stop a minute to say that it is not the quantity of birds we have; it is the variety of birds, each doing a work for the farmer in its special place, in its own peculiar way that the other birds cannot do, something that means something to every one of us. The wren, the robin, the different birds doing their own work; the robin in the Springtime taking insects and the larvae of insects chilled in the furrow, doing something that saves the farmer incalulable cost. Yet the minute the cherries begin to turn or his berries begin to get ripe and the robin comes to get a little something, he is out to soak him. The laborer, being worthy of his hire, ought to be considered with reference to the bird. I know it is aggravating to have your strawberries or cherries picked, but the robin is doing something for you in his place that, if he did not do it, no other bird would.

Dr. Kalbfus then presented the following paper:

REPORT OF THE ORNITHOLOGIST

By DR. JOSEPH KALBFUS

Who is Neighbor to the Birds?

For many years those who have investigated and understood the value of the lifework of birds have been striving to have the people around them understand this matter as it should be understood. Through pamphlets, illustrated lectures, and in various other ways, this matter has been persistently called to the attention of our people, so that the value in dollars and cents that comes through the presence of this or that species of birds is so well understood that I need not dwell upon it at this time. The great majority of birds are our friends, the value of the lifework of this family or that species is undoubted, each in its own place is doing something for us, especially for the farmer, the value of which cannot be expressed in words or figures.

Experience teaches that a little kindness, either in word or deed, has its effect upon wild animals and birds, just as it has with human beings or with domestic creatures. Without this kindly attention the birds are apt to drift or be driven from us, to our great disadvantage. What have we done, either to attract these feathered friends or to keep them with us? The fact that I may permit a covey of quail or a flock of other birds to feed upon my premises, or at least to not drive them away, is not feeding the birds; they have done me more good than I have done them; they have at least cost me nothing, and I am afraid that many of us are not doing for the birds what we should do, and I only wish I had the power to say or do something that would cause the farmers of this State to realize the true position they occupy regarding this subject. When the farmer, the farmer's wife, his sons and his daughters, do for the birds what they can and should do, then, indeed, can it be said for the birds, "The winter is over and gone and the voice of the turtle is heard in the land."

I know the many turns the farmer and his family are required to make each day; I know how all his time is taken, and when I say that but a few farmers do anything for the birds around them, I intend to make only a plain unvarnished statement of fact, and not to be offensive. I happen to have spent some considerable part of my life in the country, and say what I do after a careful canvass of the question extending through a serious of at least forty years. To my mind, the farmer has not been neighbor to the birds; I know of but few farmers who, unless they were also sportsmen, have ever done one thing to attract the birds, either game or otherwise. Upon the other hand, they have done much to injure and drive the birds away, and how have they done this? The old tree filled with woodpecker holes in which the hairy and downy woodpecker and the chickadee and the nuthatch found winter homes, and in which the bluebird and many other early Spring migrants found shelter from cold and sleet, have been long since transferred to the farmer's wood-

pile, and have gone up in smoke through his chimney. Through the practice of tree surgery, the trees in the orchard or on the lawn have all had the decayed places cut away, and the cavities filled with cement, so that the birds before named have no place into which they can retreat in time of need. They, therefore, freeze and die, and the farmer, if he pays any attention at all to the subject, wonders what has become of the birds, and I wonder how many farmers in the State have attempted to put up bird-houses to take the places of the shelters destroyed. I wonder mow many farmers in the State have hung out suet, or fresh meat, or other food for the winter birds in the time of necessity. How many of your farmer friends, unless they were also sportsmen, have ever traveled through storm and sleet to find and feed a covey of starving quail, as many sportsmen have done, or who have ever put up good hard-earned dollars as many sportsmen have done for years, to buy quail in other states and place them in this State.

An undoubted friend of our birds, Dr. William T. Hornaday, one of the great naturalists of the world, and Director of the New York Zoological Park, in writing upon this subject, among other things, says: "Show me one farmer, or forester, who goes out of his way and labors and spends money to protect his feathered friends and I will show you ninety-nine who never lift one finger or spend one penny a year in such work." And again, "If there was anything I could say that would penetrate the farmer's armor of indifference, and sting him into activity on this subject, I would quickly insert the stinger, even at my own cost and loss." And, again, "Did you ever know a real sure-enough farmer to subscribe to a fund for game protection or to spend time and money in attending legislative hearings in behalf of bird protection and increase? I never did; I mean the real farmers who depend upon their crops for their bread and butter."

Dr. Hornaday was born and raised on a farm in Iowa. He knows something about the disposition of farmers; he knows that because of their many and varied duties the majority of farmers have no time to even think of the birds; his whole life has been spent in a battle for the birds. He has come before the legislative bodies of many states in the interest of birds, and it would not do for him to tell anything but the truth about farmers. He knows there is not one farmer in fifty who can tell the names of half the birds around him, or who knows of the special work each species of birds is doing for him. Dr. Hornaday would hardly attempt to "slur" himself or his people, or to "joke" regarding one of the most serious questions he has been called to consider in his lifetime, and the sooner the farmer realizes his true position the better it will be for him, and for the birds. Don't, I beg of you, get cross at me because I dare to tell you the truth regarding this matter.

Someone will assert that birds were more plentiful years ago, when no one even thought of the birds, than they are at this time. This is no doubt true, but if that person will investigate they will find that in the days when birds and game and predatory creatures were plentiful, men were scarce, and had not taken the homes of these wild creatures as they have today. In those days the wild creatures had plenty of land on which to roam, and untold numbers of hiding

places; their feeding grounds were without limitations. Today, in highly cultivated sections, the majority of our birds are compelled to nest upon the ground or upon low bushes, within easy reach of their many natural enemies, to the great discomfort of the birds. The farmer's cat, his dog, his reaper, his mower and horse-rake, each one get in their deadly work; his cows, his horses and sheep tramp out the nest in the pasture; forest fires, built by human hands, take their toll, especially Spring fires, that not only destroy the nests of birds, but also the young of the birds and animals, and in addition destroy the trees and vines and shrubs that furnish the food for all wild creatures, when insects are gone. The swamp has been drained, wherein the covey of quail or other birds were wont to take refuge at eventide on a tussock, safe from prowling enemies. The farmer's cat, it is estimated, kills at least sixty song birds every season, more birds than are killed by any five hundred hunters in the State, excepting boys, for true sportsmen never kill song birds. Crows are permitted to hatch and increase everywhere. The farmer never thinks of the crow, except when he is pulling corn, and for destroying birds the crow beats the cat out of sight. Young crows, in the nest, are said to consume daily animal food equal to two or three times their own weight, and the eggs and young of birds are taken by crows whenever found. This disposition of the crow is what drives many birds to seek nesting places near human habitations, and causes the robin to build on your window sill. And the great wonder to me is, not that we have so few birds, but, instead, that we have birds at all.

In Wyoming last winter, and for several winters past, the utmost effort of the United States Government has been put forth to save the lives of thousands of elk dying from starvation, because settlers had taken their winter feeding grounds for farms. Elk were plentiful there, for no man knows how long, and none starved; today they must die because their winter feeding grounds have been appropriated to the use of men, just as the homes of our wild creatures of various kinds have been taken here, and still we wonder why the birds have decreased.

This much for the birds that are useful, now just a word about certain other birds.

In my paper read at the time of our last meeting, under the title "Predatory Birds," I attempted to call to the attention of farmers to the fact that all birds as I know them were not raised in nests in the tree-tops, neither were they covered with feathers. Aristotle, in the long ago, in describing man, said he was a biped without feathers, indicating to my mind that even in his day there were birds of various kinds and that old philosopher had been up against some of them. In my last paper, I attempted to call attention to the fact that in my opinion a matter of very grave importance was the manner and the channel through which the products of his farm reached the market. I especially called attention to the method of testing milk in creameries for butter-fats, and the unfair manner in which the skim milk was returned to the one who produced the milk. Since our last meeting, I have examined into this matter to a further extent, and believe that nothing that can be done by the dairyman on his farm will overcome the leakage and loss at the creamery. I am satisfied that a real bird of prey, in so far as the dairy is concerned,

is perched on the lentel of many of the creameries operating in this State, and it makes no difference whether the loss be brought about through negligence or carelessness, or with malice aforethought upon the part of the creamery employees or owners, the loss to the dairyman is just the same, and the reason why the check is short, if it is short of what it should be, means nothing to him. Three-tenths of a point off the correct test to the ordinary farmer takes the greatest part of his profit, and five-tenths takes it all, and as I understand it, it is extremely easy under the system of today, to lose his profit in just this way.

These conditions are so evident to any one who chooses to investigate from the standpoint of the producer, that in several states steps have been taken to overcome these wrongs, and official examinaers are provided for by law, and it is made the duty of such official to visit frequently at unexpected times, every creamery in his district, to take samples of the acid used and of milk from dairymen, and to make tests under varying conditions, so that as nearly fair and just conclusions can be reached as may be possible.

Why should this not be done in Pennsylvania? What is the benefit to anyone in keeping clean stables, with cattle up to the standard every time, only to be robbed later on by the middleman? It seems to me this is a matter well worthy of serious consideration, and that some plan through which these wrongs may be corrected should be conceived and put in operation as quickly as possible. To my mind, the farmer alone is the man to do this, men who understand existing conditions and what is necessary to correct those conditions. The profitable work of "farming" farmers has grown to be quite an industry, and if this task is entrusted to men other than practical men in this line of work, there is no telling what the result may be. Have you ever considered that of the many laws upon our statutes today supposedly conceived by farmers and passed at their instance and in their interests, there are but few that in reality help the farmer as much as they help the other fellow, and not one that even pretends to protect the dairyman. Farmers, as a class, are not perhaps, because of their secluded life, as fully in touch with and as wise to all worldly ways, as are some others. Some farmers I will admit are fairly well halter-broken in this direction, and have earned the method of selling a horse "that will stand without hitching," but the majority need and deserve to be told the truth and the whole truth every time; they deserve to have thrown around them every protection accorded other men. Let the Legislative Committee of this organization think this matter over.

The CHAIRMAN: Discussion of this excellent report will be in order.

MR. DeWITT: I don't like to be too conspicuous on this floor, but that was a remarkable paper, inasmuch as it told us so much truth. I read sometime ago a report of some gentleman like the Doctor on the bird question, saying that if the birds were all out of existence for five years, we could not raise a single crop in this country. I would be in favor of devising some way whereby the birds could be protected. His speaking of the quail reminded me of an incident. When I went up to my farm I frequently passed an old

quail with her young; it was a sight to see them. That Fall, last Fall a year ago, a man who hunts found this bunch of quail and he bragged to me that he got twelve of them at one shot. I said, "It's too bad somebody didn't get you."

In speaking of the creamery part that the Doctor gave us, I don't know when I have heard anything that has pleased me more than that, because that is something that I am directly interested in. I made a few statements yesterday in that regard; but this the Doctor has got so that it is, in my judgment, absolutely true, and something ought to be done to protect us, as milk producers. In my remarks yesterday, I made the statement that 40% or 60% of the money that was appropriated for road purposes did not get to the roads. The Department says that the per cent. is too large. I don't know; I made that statement from something that I had read in some report; I think I can find the report, if it would be necessary to produce it.

While I am on my feet, in speaking upon that subject, I wish to say that the Highway Department agent in our district has made some good, substantial improvements, and the dirt roads that he has worked and kept log-dragged were last year, taking into consideration the wet season, very good. There has been a marked improvement in the road question in our county since the Highway Department took hold of it. One of the speakers yesterday, in speaking of the supervisors in the county,—the supervisors of our township roads, in a great many instances throughout the State could be improved upon, especially in Tioga county.

MR. SCHULTZ: The report we had from the Doctor is an excellent one and it reminds me of this, also the remark that Brother DeWitt gave out on the creamery question—I believe the farmer must look out for himself to a certain extent. If he wants to go the easy way, the other man will come of course and do the work for him, but he always wants good pay for it. Now in our county, (Montgomery) right where my farm is, where I live and where I have farmed for thirty years, we started a co-operative creamery years and years ago, and that creamery is in existence to-day and is flourishing, as it were. That creamery is conducted by the farmers; the farmers own it and operate it, and they are doing splendid work, and that is what the farmers ought to do all over the country. Some of those things they can do for themselves, but if we let the other man do it, he is willing to do it but eventually he gets the upper hand of us and he will do just what he pleases regardless of us. It is always up to us to manage those things. If we do our part, we can take care of it.

MR. BLYHOLDER: We have had the privilege of listening to that most excellent report and have learned what others are doing to protect the birds for our benefit. Now it seems to me it is time for us to speak; I, therefore, move that this Board favor a closed season for the quail, or Virginia partridge, until such a time as they become so plentiful as to make it necessary for the season to be open.

MR. BOWN: I heartily second that motion because I believe that we must, in Pennsylvania, protect the birds. I have tried to protect them on my place, but at the present time there are very few quail on my farm. They come to my garden and pick up lots of worms that

otherwise would destroy my vegetables, and I do not think that this Board could do a better thing for the farmers of Pennsylvania than to close the season on quail. I heartily endorse Brother Blyholder's remark.

The CHAIRMAN: Wouldn't it be specific to mention a time?

MR. BLYHOLDER: Yes, until such a time as it becomes necessary to open it.

Mr. BOWN: I would say five years, if Brother Blyholder will accept that amendment to his resolution.

MR. WEIMER: I would like to get away from the motion a few minutes to bring something up before this Board in regard to the report of Dr. Kalbfus. In the first place, I suppose a good many of the older members know that I am daddy of the Hunters' License Act, and I will refer to that in a moment. Dr. Kalbfus is a little hard on the farmer, and all he has to be reminded of is, that for fourteen years the hunters tried to get an act passed through the legislature increasing the hunters' license, and it was only after I came before this body and got the consent to the passage of an Act of that kind, that it was passed. If you look up the records of your Board, you will find that to be a fact. If you remember, when I got up and spoke about tagging the hunter, there was quite a laugh went through this body; but after you gave me permission to explain that matter, we took a vote and I believe there was only one dissenting voice on that question.

Now I am a farmer from A to Z; I am also a sportsman, and, gentlemen, I want to be fair to both. If you will pardon me for taking up a little time, because no man is more interested in wild life than I am, in forestry, but I want to be fair, I want you to understand, gentlemen, that the farmer is doing nothing in a financial way to protect the game of this State. When we had in that Hunters' License Act, a provision to charge everybody $1.00 per hunter, it was only possible to get the measure passed by eliminating the farmer from the payment of that $1.00. And, gentlemen, that is not fair; the game does not belong to the farmer; the game of this State does not belong to the hunter; it belongs to the Commonwealth. While we own the land on which the hunter goes to hunt, that does not mean that we can go there and hunt ourselves at the expense of the hunter who pays his dollar. Now I think that every farmer should pay his dollar license and not accept charity from the licensed hunter. Then he would be in a position to post his land and do it without any feeling that he is robbing the hunter.

As president of several game protective societies and the Wild Life League, I receive letters something like this: "Won't you try to persuade the Game Commission to send us twenty-five quail or twenty-five pheasants to introduce on our land and we will promise to post our land and get all our neighbors to post their land to prevent the hunters from hunting on that land." Think of it, asking the State to take money to buy pheasants to put on their land and they, in turn, will then post that land and prevent hunters from hunting on it. That is not fair and I want to ask that gentleman to withdraw his motion and allow me to make a motion that we favor an

amendment to the Hunters' License Act to cut out that exemption of the farmer from the payment of the tax of $1.00, and place him on a par with the hunter so that he can talk about the protection of game and the closing of the hunting season. In our county, (Lebanon), the hunters have voluntarily agreed not to hunt quail for five years, and they are asking the farmers not to hunt quail. Now you see the practice was for the farmer to post his land, shoot the quail and rabbits and then sell them on the market. The result was that there was an amendment to the Act prohibiting the sale of rabbits.

A good many farmers object to that clause because they feel that they ought to be allowed to kill the rabbits because the rabbits belong to them on the farm. And they feel the same way about the birds. Now the rabbits do not belong to the farmer any more than they belong to any sportsman. They would belong to the farmer, more so, if that farmer had paid his dollar, because he would be on a par with the man who had paid for those animals. Why should not the farmer kill rabbits and sell them? Because, the minute he kills rabbits, he posts his land and kept hunters off of it. I would be in favor of an amendment providing that any farmer who posts his land should not be allowed to kill a rabbit, but any farmer who did not post his land could kill rabbits. The Grange passed a resolution in favor of the protection of birds, but they were not in favor of the clause enacted by the last legislature prohibiting the sale of rabbits. Now, gentlemen, that is a question that the farmers have nothing at all to do with until they pay their $1.00 the same as the sportsmen, because the sportsmen's money is protecting the game of this State. You must be fair. Thank you for allowing me to take up this time, but I think it is a matter we ought to think over thoroughly and not become objects of charity.

The CHAIRMAN: The question is on the protection of quail. State your motion again.

MR. BLYHOLDER: My motion is that we favor protecting quail or the Virginia partridge, making a closed season until such a time as they become so plentiful that it will be necessary to open the season again.

MR. BARNES: I do not want to get into any controversy with the gentleman who has just left the floor; but I want to say that I come from a county where possibly as much license money is obtained from hunting as any other county in Pennsylvania, York county, and we have very few farmers that shoot any partridges at all, and that is because the land is posted in our county; it is the fellow that pays the dollar and goes out and runs over my 196 acres and everybody's elses, and gets twenty or twenty-five rabbits a day, as he used to do, and takes them to the market and sells them and usually buys a quart of wiskey with the money. (Applause). I believe in being fair, but if you find a dozen farmers or a dozen men on this Board who are farmers, who are favorable to putting any more taxes on the farm lands of this Commonwealth, I wish they'd stand up. I feel that the farmer furnished the material for the hunter to hunt on for a number of years, and if the game belongs to the sportsmen, let them take them to the town and feed them. We feed them

all through the year when it is out of hunting season, and during the hunting season we are busy on farm work, and the sportsman comes in and shoots our birds while we are husking corn. It is an outrage to think that we farmers should be charged $1.00 if we want to go out and kill a rabbit for our family.

MR. BOWN: I heartily endorse every word that Mr. Barnes has said. Take the average farmer and he is a very busy man. This last season I had but one half day to go hunting and I got one rabbit. I won't kill any quail on my farm and won't allow anybody else to kill them. I don't take out a hunter's license, because I have the privilege of hunting on my own farm, but I don't hunt except to kill a rabbit now and then, and I am bitterly opposed to taxing the farmers for a license for hunting on their own farms.

MR. WEIMER: I do not want to get into any controversy with that gentleman over there, but I would like to have this motion amended so that we co-operate with the sportsman, not make it a movement of this body, but I would like to have that motion amended so that we go on record as co-operating with the sportsman to close the State to hunting quail for five years.

(Amendment seconded.)

The CHAIRMAN: It has been moved and seconded that this resolution be amended as stated.

MR. BLYHOLDER: Mr. Chairman, I am opposed to the amendment.

MR. WOODWARD: I would like to ask what is the amendment.

MR. WEIMER: Mr. Blyholder offered a resolution that we favor the closing of the State of Pennsylvania for five years.

MR. BLYHOLDER: No, no, let the Secretary read the resolution.

ASST. SECRETARY WELD: Moved by Mr. Blyholder that this Board favor a closed season for the quail or Virginia partridge until such time as they become so plentiful that it is necessary again to open the season.

MR. WEIMER: My amendment was that we go on record as saying that we will co-operate with the sportsmen's organization of this State to have passed an Act of that kind. They are the men who are paying the expenses of this.

MR. BLYHOLDER. Oh, no.

MR. WEIMER: Their money is used for the propagation of the game; you cannot get around that. All you have to do is to look at the records; over $600,000 is collected from them.

MR. BLYHOLDER: From whom? From the farmers?

MR. WEIMER: Oh no, don't say that.

MR. KILLAM: My reason for seconding that amendment is this; to co-operate with the sportsmen's clubs throughout the State. We have a sportsmen's club in Lackawanna county, and they are spending a great deal of money for the propagation of game and game fish and re-stocking streams. They are spending their own money and nobody else's; they are not going out asking the farmers for a dollar through all these northern and eastern tier of counties, not asking the farmers for a dollar, and there's a good many of the farms they don't hunt on.

A Member: I think the original motion of Mr. Blyholder is all right, but he should specify a time. If Mr. Blyholder will amend his motion by specifying a time—you see in one part of the State, the quail may be very plentiful and in others, not; specify a time, and when that time arrives, if necessary it can be extended.

MR. BRONG: I move that the whole proposition be referred to the Committee on Resolutions.

MR. WEIMER: There is a motion already before the House and an amendment to that motion and the amendment has been seconded.

(Mr. Weimer's amendment was then voted on and lost, after which Mr. Blyholder's original motion was adopted.)

ASST. SECRETARY WELD: The office asked me to make two announcements this morning; First, those of you who have not responded to the roll-call and who know that I have not checked your names, please give me your names so that I may check you up as having been present at some of the sessions of this meeting; and, then, again, in regard to the expenses, the Department pays the traveling and hotel expenses of the members of the Board and the Specialists. Vouchers for these expenses will be mailed to the home address of those members whom I have checked as being present, after you get home. The voucher is a new form of voucher; make it out giving the distance from your home to Harrisburg in miles and the amount of money under the column of railroad fare, for instance, and then further out, if you come by sleeper, put down the sleeper fare under its column, and then the hotel expenses here at Harrisburg, with a receipted bill attached for your hotel expenses and then the expenses of your return trip back home, your mileage and sleeper, add the whole thing up and send it in to the Department. It is not necessary to execute the affidavit on the back of the voucher; you are not required to do that.

MR. HUTCHISON: And include any meals.

ASST. SECRETARY WELD: Here is a column for meals.

MR. HUTCHISON; And make it out with indelible pencil or ink, so it can be copied.

MR. J. ALDUS HERR: If I am not intruding, I would like to have a minute or two to introduce a motion. I present to you a motion for the Board. It is a matter of common knowledge that the existence of the State Board of Agriculture on several occasions

has been threatened and even its abolition determined upon. Therefore, in view of the fact that during the trying period of the Pennsylvania State Agricultural College and in the early days of the Department of Agriculture, when both of those institutions needed defenders, boosters and assistance, this Board, because of its character, the stability and the reputation of its members for honorable and fair dealings with the farmers of the State, was able to obtain appropriations for the maintenance of both these institutions and which stand today as monuments to its wisdom; therefore, with so splendid record of achievement, and that these benefits may be continued and even enhanced, I move that a Committee of five members of this Board, including the first Vice-President as its Chairman, be appointed by the Chair to draft a bill for presentation at the next legislature of 1917, defining the duties and authority of the members of the Board in the counties they represent and establishing a direct relation between the State Board and the Department of Agriculture; defining the authority to be exercised by the members of the Board with the Department, and that this Committee shall report to this Board at its next annual meeting.

(The motion was seconded and adopted.)

MR. WEIMER: In looking up some of the old records, you will find that in 1851, I think, there was a Board of Agriculture established and they were to act as an Advisory Board to the Secretary of Agriculture. For my part, I cannot see the advisability or necessity of having the Agricultural Commission. (Cries of "Right.") Our Governor is talking so much about economy and efficiency, and I would like to make a motion that the position and the duty of the Agricultural Commission and of the Agricultural Board be referred to the Committee on Economy and Efficiency, which is paid to look into the matter, and that they be requested to make a report at our next meeting. Why this State should pay for an extra body of men to come together when this body here was primarily created to do that work. And this body is a representative body, it comes from every portion of the State while, from necessity, the Agricultural Commission cannot do that because there are only a few members, and the Act of 1851 and the supplementary Act of 1879 is very carefully drawn up and it is made in very good English, there is no doubt about it at all, and if you read it over, you will see that the Agricultural Commission—I believe that is what they call it—is illegal, they have no standing.

COLONEL WOODWARD: The gentleman used a phrase like this, "The Agricultural Commission and the Agricultural Board;" I think probably it was a slip of the tongue, but that Agricultural Board might be misinterpreted to read "Board of Agriculture."

MR. WEIMER: Well, I will ask the Secretary to use the proper terms, because just at this moment I am a little confused as to the proper title.

(Motion seconded).

The CHAIRMAN: The motion has been seconded.

ASST. SECRETARY WELD: I will get Mr. Weimer to repeat the motion.

Mr. Weimer, I will write it out and present it at the afternoon session. Then, with your permission, I will withdraw the motion for the present and make it this afternoon.

The CHAIRMAN: The Chair will appoint on this Special Committee, on the State Board, J. Aldus Herr, of Lancaster county, Frank Ranck, of Fulton county; R. J. Weld, of Warren county and E. A. Studholme, of McKean county. They will meet at the call of the Chairman, Mr. Herr.

MR. JOEL A. HERR: I would like to make a remark in regard to the economy of the work of the Board of Agriculture. I think the whole appropriation granted to our work for the entire year, over the entire State, is four thousand dollars, and I do not think that is always used up. This has been the one board, the one body, that has worked for nothing, and boarded itself. Usually, I think that is about the history of it. The Department of Agriculture was called into existence quite a while ago; the Board of Agriculture was managed by Secretary Edge, and the members, at that time, had less than half the expense that accrued just as soon as the Department was created. Now I am not going to criticize the Department, but I want to say that if you want to cut down expenses and talk economy, cut out those fellows who have some money to spend and let the fellows who haven't really had anything to spend, let them alone, they have done a noble work, they have done a work of sacrifice that no other body in this State has ever done. They have spent weeks and weeks of their time, virtually serving the agricultural public for nothing, and now the idea of removing the little pittance they do have reminds me of the story of the boy who saved the man from drowning, and when he dug him out, the man turned around and threw the boy in and drowned him. (Laughter and applause.)

(Vice President Blyholder took the Chair).

CHAIRMAN: Next on the program is the report of the Meteorologist, Prof. W. G. Owens, of Lewisburg.

Prof. Owens then submitted the following report:

WEATHER OBSERVATIONS

By PROF. W. G. OWENS

We seldom realize that we are living at the bottom of a great ocean of air. How high it is, that is how deep this ocean is, no one knows. Various methods have been used to measure its depths but the best leaves large chance for conjecture. The length of twilight has been used as the basis for this calculation, on the supposition that twilight is caused by the reflection of sunlight on the dust particles in

the higher atmosphere. The height at which meteors become visible has also been used as a basis of calculation. This height can easily be determined by two astronomers who decide to measure the angular height of all the meteors which pass between them. If they each see a meteor at exactly the same time moving in a certain direction, it is likely to be the same meteor. Then knowing the distance between the stations, it is easy to calculate the height above the earth when first seen. But through how many miles of air has the meteor travelled before the friction made it hot enough to glow? That no one can tell. From one to two hundred miles may be put down as the depth of this ocean of air. Yet one-half of its bulk is within three and one half miles of the sea level. That is why the air is so rare on a mountain top that exertion brings on speedy exhaustion.

The air is so mobile that only when it or we are in motion do we notice its presence. It is so evenly distributed that we do not realize that it has any weight. When Torricelli first advanced the theory that air had weight, the idea was laughed at as being the height of absurdity, and his friends feared that he was losing his mind. They thought it absurd to suppose that the weight of the air could force the water up a pump stock, but that the water followed the valve because "Nature abhors a vacuum" was perfectly good logic. Even the great Pascal seems to have had grave doubts that the air had weight, but he realized that the fact could be proved or disproved by taking a tube closed at the upper end, filling it with mercury and placing the lower end in a cup of mercury. This instrument he had carried to the top of a mountain near Paris. As the instrument was carried up, the mercury descended in the top as it was brought down the mercury went up again. This Pascal concluded could only be caused by the weight of the atmosphere pressing on the mercury in the cup. Since the date of this experiment it has been acknowledged that the air has weight, hence must cause things which are immersed in it to become lighter by the weight of the air displaced.

The fact that the air has weight enables it to carry water in the form of mist and cloud and invisible vapor. It makes rain and snow possible and causes moisture to be carried to almost all parts of the earth. The only places where there is no rain are such localities as are deprived of it by local conditions. Deserts are generally due to mountains which rob the winds of their moisture as they pass over them.

No one factor has more to do with the prosperity of the farmer than the atmosphere unless it be sunshine. What causes the changes in the atmosphere? Why do we have rain today and sunshine tomorrow? Why is one summer wet, as the one which has just passed, and another dry? What makes these changes? These questions have come into the minds of men since the earliest times and yet they are still waiting for an answer.

In order the more thoroughly to study and understand the phenomena connected with the atmosphere, weather records have been kept for many years. At first by a few men now by many in all parts of the world. There is no part of the earth today in which the wind currents, storm and weather changes are not recorded and kept so that they can be compared and if possible a science created by studying these isolated facts.

In the United States there are about 200 meteorological stations with paid observers and the best instruments that science can furnish. Observations are taken several times a day and many of the instruments are self-recording so that a continuous record is kept. More than three thousand (3,000) voluntary observers every day make a careful record of the weather, and at the end of the month send it to the Weather Bureau. Here the records are compiled and classified and kept for future study. This work is duplicated the world over. All this is done so that by studying these data man may be able some day to learn the laws which govern the weather and be able to foretell the weather just as an eclipse of the sun or moon can now be foretold.

A beginning has been made. We know many points about the trade winds; the nature and force of monsoons, land and sea breezes, and many other phenomena have been worked out until they are fairly well understood.

Four great storm centers have been established. One in the West Indies and extending along the eastern coast of the United States. A record in the Philippine Islands and reaching into the China Sea. A third in Samoa and the Fiji Islands and the fourth at Mauritius.

Again we have learned that the wind does not move in the direction that the storm is moving but moves in an arch. In the northern hemisphere counter-plot-wise or from right over to left, while in the southern hemisphere it rotates in the direction that the hands of a clock move. By noting the direction and change in the way the wind is blowing, it is possible to tell on which side the storm center is passing. This fact is used by sailors to keep out of the storm center.

Some stations make observations in the higher atmosphere. Sometimes kites are sent up which carry self-recording instruments. These determine temperature, pressure, wind and humidity. Sometimes the kites have steel wires to hold them so that they can go up about a mile. At other stations small baloons carrying instruments are sent up. These have been known to reach an altitude of 15 miles, which is more than twice as high as man has ever been. These instruments are marked so that anyone finding them will send them through the post office to the sending station. While many of these are never heard from yet many come back and tell their tale of adventure far above the clouds.

These inquiries in the upper air have revealed many peculiarities which were not suspected. Most of these, of course, will be of more value to the aviator than to the farmer, but they may result in our learning what causes rain and changes in the weather, as well as wind and frost. When these observations are used in connection with the weather records, they may enable some master mind to outline the laws which govern the weather.

A beginning has already been made. The storm centers which begin between the Equator and 25 or 35 degrees north latitude move west, then north, then northeast with increasing velocity till they reach about 65 north latitude when they generally have spent their force. Little is known of the storms in the Artic Zone. The storms that affect us most originate around Lake Superior and move down

the St. Lawrence and spend their force in the interior of Russia. The great whirls which are called general storms are supposed to be caused by polar and equatorial currents. They cover large areas, move slowly and take many days to develop. Small storms called tornados or cyclones, sometimes causing waterspouts generally visit limited areas and sometimes do great damage. From what has been sail it is seen that many people are working on the weather problem. Predictions are sent out by the Weather Bureau forecasting the weather for 24 or 48 hours. These are every year becoming more accurate. Yet in certain localities they often fail. This may be due to local conditions which the farmer might, by observation, be able to determine and so by the help of the Weather Bureau's forecast be able to predict the changes which were likely to follow.

The CHAIRMAN: Is there any discussion of this report? If there be no objection, the report will be entered on the records. Next on the program is the report of the Apiarist, Mr. H. C. Klinger, of Liverpool, Pennsylvania.

Mr. Klinger submitted the following report:

REPORT OF APIARIST

By PROF. H. C. KLINGER

The year just past has been a failure in the production of honey in this State, and almost the same throughout the whole country. Everywhere there seemed to be a profusion of flowers during the season, but the wet and cool weather prevented the secretion of nectar. The timely help of the Asters late in the Fall in some of the sections of the State saved the expense of buying sugar for Winter feeding. Where these flowers did not exist, colonies had to be fed to keep them from staravtion. This is the second year of failure in succession, but the average bee-keeper is always hopeful and already sees indications of a good crop in 1916. The wet Summer started an abundance of clover, and the moderate Winter weather which already gave two flights to the bees both point to a successful Summer.

At present there is possibly no subject so absorbing and perhaps alarming to the apiarist as the bee diseases now so prevalent and virulent in the State—that of American and European Foul Brood. Notwithstanding the fact that the State inspectors have been waging war against the spread of the diseases, the scope of their work is so large that it will require several years before the State is under entire control.

Thousands of colonies have been inspected during the year, and in a number of counties where the disease was not known a year ago, hundreds of colonies in as many apiaries were found infected and many in a hopeless, rotten condition. Under present conditions no one can feel safe that one or the other form of disease will not make its appearance any time during the season.

The European type is know to have spread over a distance of more than 50 miles in a single season. It is absolutely important that every bee-keeper becomes informed with all available knowledge pertaining to the subject and stands ready to combat the disease on its approach. As in the fight against the San José scale that infected the fruit trees, those who were willing to be guided by knowledge and led by instruction came out of it with healthy trees and fine wholesome fruit; and it seemed that their trouble was a blessing in disguise; so we hope out of the fight against these diseases we may come with better bees and apiaries, greater efficiency and larger profits. Of the two diseases, the American type is perhaps the most difficult to treat; yet the European is the most to be dreaded on account of its rapid spreading in an apiary, and then into neighboring apiaries and surrounding centers of infection, and the rapid decimation of a colony attacked.

The causes of the spread of the diseases may be summed up in two words: Ignorance and carelessness; not ignorant stupidity, but a lack of knowledge of the form and manner of the diseases. Many persons think their bees died from starvation, "froze to death," or the "worms killed them," when, if the facts were known, it would have been found they died from infection of one of the brood diseases.

The means of dissemination are several: The shipping of bees, or moving them from one place to another; the sending of queens in cages which contain food mixed with infected honey; and often honey cans, section boxes and other containers are thrown in garbage places where bees will find the infected honey and carry it back to the hives. Undoubtedly the most serious way of infection is that of robbing out a weakened colony. Sometimes a quiet robbing takes place that only an experienced person will detect. It is a question much under discussion at the present that the European type, on account of its rapidity in spreading, is carried by the bees on their bodies to the fields, and flowers and other bees coming in contact with the same flower may carry the germs back to other colonies in the same or other apiaries. This is thought probable also from the fact that diseased larvae from the American type are never touched by the bees, while under favorable conditions they will clean out the diseased larvae of the European type. So that in trying to rid their own colony of the infection they may throw the germs outside of their own hives or carry them to the fields.

For curing the disease there are several methods given in journals, State bulletins, and by the inspectors. It would lengthen this report to go into details. One fact has been confirmed by all authorities: That black bees more readily succumb to the disease than do the Italians; and, also, where vigorous Italian queens have been introduced into infected colonies a permanent cure has been effected without any further operation.

Morley Pettit, the Provincial Inspector of Ontario, Canada, says, "The cure for American Foul Brood is only permanent when pure bred Italian queens are introduced by all black or hybrid stocks." "Pure bred Italian bees of vigorous stock are almost immune to European Foul Brood."

If the State expenditure shall be of the utmost benefit, it is of the greatest importance that the State receive the co-operation of

every man whose interests are touched. The remedy for foul-brood is in harmony with the best system of bee-keeping that must be followed in order to obtain the greatest success, even if there were no diseases. "Keep bees better and keep better bees."

The CHAIRMAN: Next is the report of the Economic Geologist, Mr. Baird Halberstadt. Is Mr. Halberstadt in the room?

MR. HUTCHISON: He just stepped out a moment ago.

The CHAIRMAN: We will proceed with the next report; the Agricultural Geologist, Mr. W. H. Stout, of Pinegrove. (Applause).

MR. STOUT: Mr. Chairman, Ladies and Gentlemen, Members of the Board: This comes rather unexpected and of a sudden, and I have hardly had time to collect a few sentences to begin my discussion. I am very grateful for the favors that have been shown me by the members in continuing me as one of the specialists up to this time and re-electing me again, for which I thank you very much. Without wasting any time, I want to take up the topic, and before doing that, I wish the members, the newly elected members and the older members also, would just refer to the program and read the legislation creating this Department or this Board of Agriculture, and familarize themselves with the law. It states very distinctly what its duties are and also that they shall meet here annually at this time; and it is a Board created by the Legislature of Pennsylvania, and while efforts have been made to abolish it, it cannot be abolished, unless the law is repealed that created it, and you people take this along home with you and stand up among your people, among your home people, and support the continuance of this Board, because I believe it is the best thing that we have had yet in our agriculture in this State. (Applause.) When I was home, I looked over some addresses by prominent people and I found it a common thing for these prominent public speakers to have a sort of a preliminary address, a few introductory remarks, so I prepared a few introductory remarks to offer on this occasion. I headed it, "Cornfield Philosophy and Soothing Syrup." (Laughter.)

Mr. Stout then presented the following report:

REPORT OF THE AGRICULTURAL GEOLOGIST

By MR. W. H. STOUT

Obedient to a summons to appear here at this time to give an account of my stewardship since we met last, I present some thoughts on a topic which may not contain anything of interest or value.

There is this consolation in the knowledge that it costs each one only about fifteen minutes, or less time than is often consumed wait-

ing for a car or for desert at the dinner table. Also some of those present on the State's pay roll receiving one to four cents a minute while here can rest in contentment, and others can rest, digest and assimilate the meals for which the State pays. Differing mentally and physically, we do not see things in the same light or from the same point of view; so if none agree with the sentiment in the following discussion is only proof that majority may be wrong and the minority right.

There are no two things exactly alike in nature, in the vegetable or animal creation, the human race being no exception. A very prominet orator, statesman, politician, peace propagandist, editor and agriculturist related this story during a political campaign: "A farmer hurrying a load of hay from a field before an approaching storm, had part of the load slip off which was reloaded, another start made and after going a short distance, more dropped off, which was replaced. All went well until in turning to enter the barn nearly half the load upset, while the storm was almost overhead. The farmer's beloved wife came to offer assistance while he was in ill humor, and overheated, tugging at big forkfulls to get it in the barn, the wife anxious to help asked, "Can I do anything to help you?" to which the husband replied, "No, dear, you cannot, go in the house, I am going to express myself." So I am going to express myself in mild language and plain terms on the subject of agricultural geology, and history reviewed, with emphasis on *reviewed*, which I tried to confine to fifteen minutes, without exceeding the speed limit.

Spragging the Wheels

At the coal mines, to prevent the mine cars without brakes from running wild, use is made of tough, round clubs, pushed between the felloes to check the speed and stop the cars where wanted. The time is here when there is danger of the agricultural cars overloaded with mushroom agriculturists and theorists on a down grade, to throw some clubs on the track and in the wheels, to avoid the danger of going over a precipice or into the breakers, with the Juggernaut crushing the taxpayers under the wheels.

AGRICULTURAL GEOLOGY AND HISTORY REVIEWED

After spending much time and thought during many years reading theories and following the field workers and so-called scientists over much of this and other countries, striving to prove that the soil contains such vast stores of plant food elements that many generations can maintain themselves on the elements inherent in the soil. Virgin soils always contain more or less available plant food in proportion to its derivation, yet there is none inexhaustible although it may yield for considerable periods remunerative crops; it will eventually cease to produce paying crops. The alluvial lands—periodically overflowed—those derived from limestone and chalk with that from volcanic activities are most valuable, while the rocky, sandy, shaly or those consisting of very fine silt and tenacious clays are neither so lasting and more expensive to maintain.

The early settlers already knew the best soils, selecting such as were heavily timbered or along alluvial bottom lands where, with little effort, large crops could be cheaply produced for export such as cereals for milling as well as for distillation. Whenever land owners found the soil under cultivation less productive than it was originally, the heavily timbered hardwood forests were cleared and wastefully destroyed, or used up in building houses and barns with the choicest timber that would now be worth fortunes. The great barns and other buildings on the farms in the most productive sections testify the wealth taken from the land during the period when the farmers were capitalists loaning money, donating land for canals and railroads and investing in stocks and bonds which was often the last seen of their money, because of reorganization and receiverships.

It is also to be observed that in many parts of Pennsylvania, from the Delaware to the Potomac rivers, the valuable estates and fertile farms are now in the hands of absentee landlords, residing in towns and cities, engaged in some business that affords enough means to support the farms, display their wealth and their ignorance about agriculture, appealing to the State for the aid of rural uplifters, extension agents and specialists to help them make a big showing in the magazines and the press in general.

Under the system of finance, government and political rule, it seldom happens that actual farmers acquire means to purchase additional land, while those engaged in commerce, banking, law or in politics—provided the latter can stick to an office for terms of ten to twenty years, at salaries ranging from three to six thousand dollars, drawing on public funds to the extent of sixty to eighty thousand dollars—can invest in country estates and live retired as prominent agriculturists. Tenantry is on the increase; real farmers becoming tenants or driven into less productive sections where land is cheap to eke out an existence under adverse conditions.

Thus modern history is only repeating ancient history when the so-called nobility, or in plain terms the criminal cunning gained control of wealth created by labor, resulting in the decline of all the ancient governments being reduced to absolute proverty through exhausting the soil and the maintenance of an aristocracy, with immense military force to overawe their subjects. It is possible to postpone the inevitable with modern methods in the discovery of mineral fertilizers and earlier wastes, but it is questionable how long the supplies of moderate priced artificial fertilizers can be obtained to supply the quantity necessary to restore what is removed with crops. Chemistry may possibly come to relieve the future by combining the elements abundant in nature by preparing capsules of protein, carbohydrates and fats in condensed form to sustain future generations of inhabitants in countless numbers a century hence. The only salvation for farmers, as well as the general public, at this time is the use of commercial fertilizers and chemicals, regardless of what some would-be advisors, who sometimes ridicule its use may say. The honest fertilizer manufacturer who supplies the trade at reasonable prices, with honest goods deserves the respect of the people.

After spending many hours studying over the subject of agricultural geology, reading text-books and following the soil survey in its

ramifications over states and nation, my conviction is that the public fund expended is just so much money wasted for all it accomplishes. The advice is the same and may be stated in one short sentence: Use manure, lime, chemicals, cowpeas, soy beans, crimson clover, alfalfa, rye, etc., with green manure for humus, then irrigate or tile drain, as the conditions suggest.

It is doubtful whether any practical farmer who is established in a location, on such soil as may make up his farm, ever derived any benefit whatever from all the vast literature and maps published and the great amount of money spent in soil surveys and soil analysis. The mechanical condition of a soil is of greatest importance, when of a consistency to hold moisture and fertility the other elements can be supplied, while other soils may show a larger amount of mineral elements by chemical test when in an unavailable state are entirely useless in practice. It has been demonstrated in England and our State that chemical fertilizers can be relied upon to produce crops equal to that of manure, resolving itself into a question of economics. Where manure can be obtained for nothing or at low cost, it is advisable to take advantage of the opportunity. Not so much for its plant food value as for the humus or carbonaceous matter contained to ameliorate the soil and hold moisture when that is lacking.

As for the soil analyses which may show tons of the elements needed by plants, it is not safe to depend upon it. Crops are the best guide that every farmer has at his command; so that by simply observing and a little experimenting is of more value than all the fine spun theories advanced by so-called experts. At small expense a small quantity of hydrochloric acid of ammonia with red and blue litmus paper, any one can make soil tests that are at once instructive and enlightening.

Of all the activities imposed upon the tax payers as rural uplifters, experts, specialists, etc., the agricultural press throughout the country is of more value to practical agriculture than all other agencies combined. The reason is that they disseminate all the useful discoveries of science and contain the actual experience of thousands of close observers and practical knowledge from all parts of the country.

After deliberating and considering the situation, I have concluded that it is time to call a halt and cry out "hold, enough!" When stalwart farmers follow their shipments to market and shed tears because their strenuous labor in producing tomatoes, peas, beans, potatoes, peaches, etc., do not realize enough cash to pay trolley fare, finding themselves in debt for freight and commission having labor, taxes, with incidental operating expenses drives them to insanity and even suicide. At the same time more rural uplifters manifest their interest in agriculture, among whom are newspaper publishers who could not distinguish between alfalfa and clover, between a jack and a giraffe. Yet they presume to trade on the credulity of farmers, assuming an attitude of friendship for benighted ruralists.

Even highly perfumed town dudes wearing creased pants, looking through their bi-noculars have regard for the farmer; treating former mud-sills and cold hoppers with a show of respect, because they hope by passing a few years in some institution where agriculture is taught

to gain positions as county agents or professors of some sort and on the pay roll of a State. After passing through the corridors of some college from room to room listening to lectures, in a short time they emerge as from a cocoon, full-fledged agents of "agentesses" to be quartered on the community.

Real farmers are getting tired of being chastised, harangued, scolded, offered free advice and encouraged to rob the soil in order to produce more and cheaper butter, eggs and other products, costing more than they bring in the market. Having attained such a degree of efficiency with "greatest economy," it is not necessary to bear the burden of increasing taxation to maintain an army of self-constituted guardians of agriculture in this country. Therefore, they should be provided with picks and shovels, crowbars and overalls to demonstrate the power of the fulcrum in prying out rocks and the proper angle to use tools with the least waste of energy and the greatest efficiency on the roads. Our new dependencies, Alaska, Cuba, Porto Rico, the Philippines, need scientific advice where numbers might be assigned and some to China, India and Persia where the inhabitants frequently perish of starvation. Using the phrase "greatest efficiency and economy," may be considered as a joke in our laws, likely introduced by some humorous member of the Legislature from Philadelphia or Pittsburg to catch the unwary ruralists with a few meaningless words regarded as a "scrap of paper."

Farmers can get many things they don't want or ask for but reduced expenses, revision of our tax laws, the initiative, the referendum and recall are treated with contempt. There are throughout the country a class of persons manifesting uncommon interest in the farmers business, constantly prodding them on to raise larger crops when it is a well known fact that maximum crops are as a rule not remunerative. As an illustration: Take fifty bushels of wheat at one dollar per bushel, is worth more than a hundred bushels at fifty cents per bushel. Each sixty pounds of grain removes twenty cents worth of fertility at normal prices for fertilizers while the difference in value is more than made up in the extra cost of harvesting, threshing and marketing. At prevailing prices for fertilizers with potash at $400 per ton, nitrate and phosphorus 40% higher, the fertility loss is vastly greater.

Since the passage of the Act there is money in view and more in prospect for extension work which creates rivalry between Boards of Agriculture and Departments and Experiment Stations, each striving to secure a share for good, round salaries to place rural uplifters in the field having more regard for the dollars than for the farmers' prosperity. It appears as if farmers were regarded as public servants not engaged in private business, and were expected to dig out of the soil the support of all others many of whom "do not labor, nor do they spin" but live as parasites upon agriculture enjoying the best the land affords, yet crying for more, more! The scheme to impose upon the country some two thousand uplifters (one in each county in the country) did not originate from farmers, but was promoted by a number of railroad officials, bankers, politicians, a few editors and manufacturers styling themselves "The National Fertility League," through their activities had the Smith Lever bill

passed. It is quite surprising to know how the farmers are esteemed these days and tickled like aphids are by ants to yield up sweet secretions to their tormentors.

Now that there is some show of prosperity in some lines of agriculture due to European conditions, it is worth while to watch Congress where the demand will be for appropriations and more appropriations for a variety of uses—good, bad and indifferent—only to increase the cost of extravagance and burden upon the honest industry.

REPORT OF THE COMMISSION ON COUNTRY LIFE

It is six years since the then President (the same who may be again President) reported after traversing many states and collecting information through circulars on the condition of agriculture and rural life.

Among the recommendations to improve conditions are the following: Schoolhouse meetings, the preservation of natural resources, preservation of forests and streams, etc.

They condemn the holding of land for speculative purposes, monopolistic control of water power, restraint of trade, and, in a general way, trusts, combinations and monopolies, also intemperance.

In this way they touched a vital spot on economical problems which was not appreciated by the beneficiaries of the so-called "men of affairs," so that instead of publishing the report in detail for general circulation as a public document it was confined to a limited issue for members of Congress.

The representatives in Congress and agents of "Divine Providence" evidently saw that it reflected upon special interests, promoters and speculators who did not care to see it published to the world that American farmers are exploited by combinations of capital, transportation, mining and manufacturing interests.

The commission received the same compensation that many of us receive only having their expenses paid.

With a view to get the report before the public and obtain a little compensation for their time the commission placed the report in the hands of a publishing house, and any profit derived from the publication accrues to the members of the commission.

Sturgis & Walton Company, N. Y., are the publishers.

MR. DORSETT: Brother Stout, it has been the custom from time immemorial to place flowers upon the casket and a sprig of evergreen on the grave of our departed friends; but we, the members of this State Board, your co-workers, deem it far better to place a few flowers along the pathway of the living and not wait until they are dead. In behalf of the members of this State Board and of your co-workers, I therefore deem it a source of pleasure to present you with this bouquet of flowers as a tribute to your years of usefulness in the interests of agriculture and in the general uplift of mankind. Your profound philosophy and deep sense of humor have been greatly enjoyed by your fellow-members and co-workers. Take this little gift as a token of our best wishes for many years of pleasure and prosperity, (presenting a basket of flowers). (Applause).

MR. STOUT: I am too much embarrassed and surprised, and without a dictionary or an encyclopaedia to collect sentences to ex-

press my gratification at this gift. I will call upon my excellent friend, neighbor and co-worker from Pottsville, Baird Halberstadt, to respond. (Applause).

MR. HALBERSTADT: Gentlemen of the State Board of Agriculture: Let me say, in behalf of the whole people of Schuylkill county, that we are proud of the man who has done more to advance the cause of agriculture in one county than any other five men in it. (Applause.) The man who has traveled early and late, always ready and willing to help anybody who wants advice in regard to farming or geology. To him we owe the agriculture, the formation and the keeping up of the Agricultural and Horticultural Society of Schuylkill county. It was uphill work for him, but today we have two hundred members among the farmers of our county. We are all proud of him; he is our Grand Old Man of Schuylkill county, and we all love him, and the more we know of him, the more we think of him. When people want to know things, although there are some jealous farmers over there, they go over to him, and some time ago, one of the farmers was asked whether they did as Mr. Stout did. He said, "No, we don't, we do just the opposite." But the fellow subsequently was discovered looking over Mr. Stout's fence one night to see what he had done the day before. They all wanted to know exactly what he was doing, and if they had followed his advice, they would have had the same success that he has had, for I want to say to you that he picked up an old, wornout farm and nearly starved to death getting that thing going; he couldn't help it, he had to take it, and today he has got one of the most productive farms in Schuylkill county.

In behalf of Mr. Stout and in behalf of the farmers of Schuylkill county, and in behalf of the Agricultural and Horticultural Society, of which I have the honor to be President, I thank you all sincerely for this mark of esteem and affection which you have shown the Grand Old Man of Schuylkill. (Applause).

The CHAIRMAN: The next report will be that of the Economic Geologist, Prof. Halberstadt, of Pottsville.

PROF. HALBERSTADT: I have brought with me a number of specimens and I will be glad to show them to any of the gentlemen who have enough interest in the subject to look over them. They are specimens showing the different minerals and the minerals for which the iron pyrites are sometimes mistaken.

Prof. Halberstadt then presented the following report:

REPORT OF THE ECONOMIC GEOLOGIST

By BAIRD HALBERSTADT, F. G. S.

During the eight years of my encumbency of the office of Consulting Specialist in the Department of Mineralogy and Geology, fully ninety per cent. (90%) of the specimens of minerals forwarded to me from various parts of the Commonwealth by farmers and others have been of the same species, varying only perhaps in form. In none of the

localities from which these came does this mineral appear to exist in deposits of value nor do large deposits of it of commercial importance seem to have been found in any part of Pennsylvania, certainly none have been in the past nor are any being exploited, on a commercial scale, at the present time. Notwithstanding this, there has been no mineral, perhaps, that has raised so many false hopes, and has been so often the foundation upon which so many "Castles-in-Spain" have been erected.

It has fallen to my official lot and always with a deep sense of regret, if not sorrow, to be obliged to shatter these "Castles" and to inform the prospectors or senders, that they have been building foundations with sand and that their long cherished hopes of great wealth, if based upon this mineral alone, will not be realized. Men, women and children indulge in fond hopes and one of these is the acquisition, sooner or later, of great financial wealth. If these indulgences bring pleasure only, no harm is done and it is even perhaps well that such hopes are entertained rather than gloomy forebodings. When, however, it is at the expense of time, money and labor, the disappointment that usually follows is keen, if not bitter. It must not be inferred that this mineral has no value but, on the contrary, it is a very important one. To be commercially valuable, the ore must occur in deposits of sufficient size and purity, at accessible localities, to make its exploitation or mining profitable. Comparatively speaking, the number of such developed deposits in the United States is relatively small, and these are usually found in the crystalline schists of the earliest geological formations.

To prevent further vain searches and the consequent losses of both money and happiness, it has been thought well to make this mineral the subject of my report for the current year, and to present it in such form, that even those who have little or no acquaintance with Mineralogy will no longer be deceived by it. An attempt, therefore, will be made to explain the origin, the occurrence, the uses and the value of this mineral and how to distinguish it from the more valuable minerals for which it is frequently mistaken, by the layman.

The mineral referred to is Iron Pyrites or Bisulphide of Iron (FeS_2). It is also known as mundic, a term applied to it by the miners, and as "Fools Gold." The name *pyrites,* a Greek word, means fire stone. The elder Pliny refers to it in his "Naturalis Historia," written over eighteen hundred (1,800) years ago; "There is much fire in it."

It was years ago used in place of flint on fire arms and on tinder boxes. From this, it is seen, that the mineral, under consideration has long since been known and it is quite probable that it has deceived, through all these centuries, countless thousands just as it is doing some people at the present time, and all because of its mischievous color resemblance to the precious metal gold, and its very wide dissemination or distribution in rocks of all kinds and of all geologic ages.

ORIGIN

The origin of and the mode of precipitation of iron pyrites are still, in some cases, questions of doubt. One theory is that iron pyrites result from the action of sulphuretted hydrogen upon salts of iron. Dr. Spurr has observed that: "In shale beds, there is

always a considerable percentage of iron. This usually combines with the sulphur contained in organic matter to form sulphide of iron (pyrite)." Some of it is probably of igneous origin.

OCCURRENCE

Iron pyrite is a very widely disseminated mineral. It occurs in rocks of all varieties and in all geological formations, from the earliest to latest, usually and unfortunately, however, in quantity or amount too small to make its separation a profitable undertaking. It may occur as bedded or vein deposits, or sporadically, as crystals in cubic form or some of its modifications; as nodules or lentils, in thin flakes or small particles throughout, slates, shales, schists, sandstones, etc. It is also found in coal beds, sometimes appearing as nodules; as partly separating the coal benches either as hard masses or intermixed with the mineral charcoal bands so often found in coal beds and known to the miners as "Mother of Coal." Again, it may be found in flakes as thin as the finest tissue paper adhering to the coal, along lines parallel to or at right angles to the planes of stratification in joints, where sometimes are found thin slabs, perhaps a foot or more in length covered with small cubic crystals, with a brilliance almost equal to that of cut diamonds. Its presence in coal is always detrimental and, in extreme cases, so much so that for either the manufacture of coke for metallurgical purposes, the use of such coal is precluded, because of the increase in sulphur content of the coal due to its presence.

The deposits of this mineral of economic value, now being exploited in the Eastern United States, seem to lie, geologically, in a belt of the Pre-Cambrian metamorphic rocks, extending, according to Prof. Reis, from New Hampshire to Alabama. The principal sources of domestic supply are in New York, Virginia, Missouri, California and Wisconsin. (In the latter state, the pyrite is separated from zinc blende by electrostatic methods;) while as a by-product in coal mining, Ohio, Indiana and Illinois produced 47.486 long tons in 1913. The production of pyrites in Pennsylvania has been very small and was limited to by-products of coal mining and not from distinct operations for the production of this mineral only.

GENERAL DESCRIPTION

Pyrite (Bisulphide of Iron) is a mineral of brassy yellow color; it is often found in the form of a cube, sometimes as an octahedron (8 sided) and as a five edged twelve sided crystal known as the pyritohedron or other forms of the isometric system. Again, it may occur in crystalline masses which may assume any form; sometimes it appears in the form of a bunch of grapes or botryoidal; again, it may be globular or in stalactitic form. It is extremely hard and brittle. In the scale of hardness, it ranges from 6 to 6.5, that is to say, it is harder than orthoclase (feldspar) and not quite as hard as quartz. The streak it leaves, after being rubbed on an unglazed porcelain or other white surface, is greenish to brownish black. It is opaque or impervious to rays of light, no matter how thin the piece may be. Its specific gravity is 4.9 to 5.2, being less than one-third as heavy as gold (19.26) and about one-half as heavy as silver (10.5). If the faces or sides be carefully examined it will be noticed

that these are striated, that is fine grooves or scratches will be found. These, it will be further noticed are at right angles to each other on adjoining faces or sides of the cube.

COMPOSITION

Iron Pyrites or Bisulphide of Iron is a combination of sulphur and iron; when pure, the sulphur percentage is 53.4%, while that of the iron is 46.6%. It frequently contains copper, arsenic, nickel, cobalt, gold or other minerals but in very small quantities.

USES

The principal use to which Pyrite is put is for the manufacture of sulphuric acid. Formerly, sulphate of iron or copperas was made from it but, as this is now obtained as a by-product of a process of galvanizing iron, the former method of producing it from pyrite has been superseded. (A few years ago, more than half of the sulphuric acid consumed in the United States was in the manufacture of superphosphates). Although this mineral is rich in iron, it is not used as an ore in the furnace, because of the excessive amount of sulphur it contains. Much of this injurious constituent can be eliminated by roasting the pyrite before using. The residue, "Blue Billy," is not, at the present time, considered a desirable ore for the manufacture of iron. The pyrite from some localities has, however, been successfully treated and is being used for the purpose. The "Blue Billy," after being treated to remove as much of the contained sulphuric acid as possible, is used to some extent in the manufacture of paint. It is not improbable, that before long, if not already, a successful process or method of treating the "Blue Billy" to remove its detrimental constituents will be found and its use in the manufacture of iron will be practicable and of economic importance.

HOW TO DISTINGUISH IT

The minerals for which iron pyrites may be mistaken are gold and copper (the latter in the form of chalcopyrite) and pyrrhotite. It will be found first, that the pyrite is harder than gold, as the former can not, except with great difficulty, be scratched with a knife blade; the pyrite is brittle, while the gold is soft and can be readily cut with a knife or hammered out into thin sheets. It differs from it both in color and the color of its streak. Chalcopyrite which is a sulphide of copper and iron can generally be distinguished from the pyrite by its greater softness (3.5) and with the naked eye, by its darker brassy color and its often irridescent tarnish, and the difference in its crystal forms. It is somewhat lighter in weight (specific gravity 4.25). Chalcopyrite crystallizes in the tetragonal system but is more frequently found as an ore mineral in irregular grains and masses. The color of its streak is greenish black.

Pyrrhotite or magnetic pyrites, another sulphide of iron, is sometimes mistaken for iron pyrites. It can readily be distinguished from it, because: (1) it is much softer; (2) its color is of a bronze rather than brassy yellow; (3) if it be broken into small pieces or powdered, it will adhere to a magnet. Its streak is grayish black, but, like the pyrite, it is brittle. Pyrrhotite may in turn be mistaken

for bornite and niccolite, as some specimens of these resemble pyrrhotite. A test with the magnet will quickly settle the question of its identity.

Marcasite has the same chemical composition but differs from pyrite in appearance and form of crystals. Its color, when freshly fractured, is lighter or paler. Its streak is black. It decomposes more readily when exposed to atmospheric influences. Both the pyrite and marcasite are used for the same purposes.

PRODUCTION

The production of iron pyrite in the United States, its value, and the price per long ton for three years is exhibited in the following table:

MINERAL RESOURCES OF THE UNITED STATES

Marketed Production of Pyrite in the U. S., 1912-1914, by States, in Long Tons.

State.	1912.		Average price per ton.	1913.	
	Quantity.	Value.		Quantity.	Value.
California,	61,812	$201,453	$3 26	70,536	$218,525
Georgia,	*	*	*	11,110	55,034
Illinois,	27,008	62,989	2 33	11,246	31,966
Indiana,	1,462	5,684	3 89	1,242	3,115
Ohio,	14,487	43,853	3 03	13,622	34,998
Virginia,	162,478	621,219	3 82	148,259	587,041
Wisconsin,	17,898	70,518	3 94	25,328	94,727
Other States,†	65,783	328,552	4 99	59,995	260,618
Total,	350,928	$1,334,259	$3 80	341,338	$1,286,084

State.	1913.		1914.	
	Average price per ton.	Quantity.	Value.	Average price per ton.
California,	$3 19	71,272	$235,129	$3 20
Georgia,	4 96	*	*	*
Illinois,	2 84	22,533	59,079	2 62
Indiana,	2 51	1,710	5,281	3 09
Ohio,	2 57	7,279	19,718	2 71
Virginia,	3 96	141,276	556,091	3 94
Wisconsin,	3 74	14,188	78,460	5 53
Other States,†	4 34	78,399	329,588	4 20
Total,	$3 77	336,662	$1,283,346	$3 81

*Included in "Other States."
†1912: Georgia, Missouri, New York and Penusylvania; 1913 Missouri and New York; 1914: Georgia, Missouri and New York.

The marketed production of pyrite in the United States since 1882 is given in the following table:

Marketed Production of Pyrite in the U. S., 1882-1914, in Long Tons.

Year.	Quantity	Value	Year.	Quantity	Value
1882,	12,000	$72,000	1899,	174,734	543,249
1883,	25,000	137,500	1900,	204,615	749,991
1884,	35,000	175,000	1901,	*241,691	1,257,879
1885,	49,000	220,500	1902,	*207,874	947,089
1886,	55,000	220,000	1903,	*233,127	1,109,818
1887,	52,000	210,000	1904,	207,081	814,808
1888,	54,331	167,658	1905,	253,000	938,492
1889,	93,705	202,119	1906,	261,442	931,305
1890,	99,854	273,745	1907,	247,387	794,949
1891,	106,536	338,880	1908,	222,598	857,113
1892,	109,788	305,191	1909,	247,070	1,023,157
1893,	75,777	256,552	1910,	241,612	977,978
1894,	165,949	363,134	1911,	301,458	1,164,871
1895,	99,549	322,845	1912,	*350,923	1,334,259
1896,	115,483	320,163	1913,	341,339	1,286,074
1897,	143,201	391,541	1914,	336,668	1,283,346
1898,	193,364	593,801			

*Includes production of natural sulphur.

The figures for 1915 are not at command but the enormously increased demand for sulphuric acid by the makers of high explosives has probably vastly increased the output of the United States and increased its cost.

The CHAIRMAN: Gentlemen, you have heard the report; will you discuss it? If not, it will be received and included in our proceedings, and we will proceed with the next report, which is a report on Livestock, by Mr. W. F. Throop, of Espyville.

MR. THROOP: Mr. President and Members of the State Board of Agriculture: As a new member of your body, this is my first appearance before you. After listening to the papers you have heard this morning, I feel that I am surely out of place to get up and try to interest you or give you anything that will be of value to you after these reports, but I want to say to you that I do feel proud to be a member of such an honorable body of people, composed of such grand and noble men as Brother Stout. I am going to detain you but a very few minutes.

Mr. Throop then presented the following report:

REPORT OF COMMITTEE ON LIVESTOCK

By MR. W. F. THROOP, *Chairman.*

My chief interest lies in agriculture. That is why I am dairyman. The future of agriculture, which means the future of the people, is to a great extent bound up in dairying. Agricultural pre-eminence can best be conceived through the best development of stock husbandry. Any business gains in its returns, in its interests, in its

attractiveness, just in proportion to its complexity; just in proportion to the natural effort it takes to handle it. When you introduce into the business of stock-raising the element of superior intelligence of plan, of purpose and long continued and persistent effort, just the minute that you put that business, or any other business before people who have money, just as long as it takes a mind to run a business it will attract other minds to it, and its future is assured.

We are just now in an era when the greatest intellectual pursuit of this country is agriculture. It takes more money, more plans, more courage more inspiration than any other kind of a farmer to be a dairyman. This is no reflection whatever on the grain farmer or any other farmer, because of the fact that we need the grain farmer to produce the grain that we cannot produce ourselves.

In discussing the question of livestock in Pennsylvania, I am at a loss where to begin, because we cannot rank as a real stock-raising state, although we do raise some and should raise lots more. But it is the condition of livestock in the State, the way we care for it in order to make it most profitable to the farming interest. When I say we are not a stock-raising state, I should go farther and say that the interests of the state are so many and varied. We probably have one of the best markets of the United States right in Pennsylvania, but we have allowed those markets to be largely supplied from the outside, more particularly the animal foods.

Pennsylvania is not considered a hog-raising state, although we do raise some, and good ones too. There is money in raising sheep, and certain sections of Pennsylvania are adapted to this industry. The dog nuisance is a serious obstacle, but that can be remedied or controlled by placing a higher value on the sheep than on the dog.

The horse industry in this State is a very important industry. By using pure bred sires, Pennsylvania may improve her horses. The tractor has not yet crowded the horse and his usefulness from the average farm as yet.

The theory of preparedness will apply to the breeding, raising and marketing of beef cattle. From reports of breeders of beef cattle in Crawford county the farmers throughout the state are finding ready sale for pure bred sires of a good strain within the last three months much better than within the last five years. The choice of breed is a matter of individual liking. There is no battle of breeds. The average citizen takes too little interest in the bulletins issued by the State and Federal Bureaus of Animal Industry, but the one prepared by the Committee of Statistics and Standards of the Chamber of Commerce of the United States should be interesting to every meat-eater. It says the future supply must come from the South. That section can produce more cheaply than any other section on account of its cheap lands. The pasture season is longer, grazing good, and feed can be produced at a minimum price, and shelter during the short winter is inexpensive.

In Pennsylvania there are thousands of acres of mountain land that is too rough for farming which could be used for grazing purposes to a very good advantage. Through the northern part of the State Canada blue grass can be raised, and the southern part of Kentucky blue grass, and there is no better pasture than these two grasses for producing a fine quality of meat.

In one of the daily papers of a recent issue, I found this article on livestock values in Pennsylvania. The article states that agricultural conditions are excellent and prospects of a big year for the farmer are bright. These are revised figures from a statistical report of the State Department of Agriculture: Milk cows and other cattle are rated as being 101% of the average, while horses, mules, sheep and hogs are up to the average for this State. The following divisions are made:

	Average Value.
Horses,	$121.00
Mules,	128.00
Milk cows,	55.50
Other cattle,	29.00
Sheep,	5.40
Hogs,	11.80

May the livestock breeders of the State of Pennsylvania look ahead to a broader future, by putting forth greater efforts, being prepared to feed the increased population, securing for ourselves health, wealth and prosperity.

The CHAIRMAN: Gentlemen, you have heard the report; will you discuss the report? If not, it will be entered in the proceedings of this meeting. The next is the report on Poultry, by W. Theo. Wittman, of Allentown.

Mr. Wittman presented the following report:

REPORT OF THE COMMITTEE ON POULTRY

By W. THEO. WITTMAN, *Chairman.*

As Chairman of your Committee on Poultry, I would respectfully report that several interesting conditions have existed in this industry during the last year. That the consumption of eggs is still on the increase and that the quality of the eggs consumed, due to our Pure Food laws, is steadily improving, is without doubt. That the next logical step, after making sure that all eggs marketed shall be fresh or fairly fresh, is to see that all eggs are clean and are produced under sanitary conditions—a fresh or comparativley fresh egg is no guarantee that said egg is always desirable from a food standpoint.

That the amount of poultry consumed has increased or will increase is doubtful, for poultry meat consumption being one of the higher priced meats will decrease, with the general decrease of meat consumption, that seems inevitable. Neither does there seem to be any improvement in the quality of the poultry marketed and just as long as poultry generally is regarded as a luxury, chicken and turkey on the table will be regarded as "chicken" and as "turkey" regardless of its quality on the market. If growers could make growing specialty market poultry profitable or if that big class of producers, viz: farmers, would generally adopt caponizing, there would be a prompt and marked improvement in market or killing poultry.

The apparent decline in the interest shown in fancy or show poultry and in poultry shows or exhibitions mentioned in last year's report still continues. However, with the advent of good times, the demand for this kind of poultry and the prices for same have shown some improvement, although still way below those prevailing only a few years back.

Likewise, the enormous interest in utility or work-a-day poultry mentioned as having taken to a large extent the place once occupied by fancy poultry, continues unabated. This interest centered to a great extent on White Leghorns, and especially English White Leghorns, on Wyandottes, Rocks, Reds and anything that could make a record at laying eggs. Probably, of all these, the English White Leghorn and its crosses with native or American bred Leghorns, thanks to the liberal way Pennsylvania poultry people imported, predominate as an egg farm proposition. A striking example of the good of all this is the hen Lady Eglantine, winner of the late North American egg laying competitions and of the world's record, with a total of 314 eggs laid in one year and owned by Mr. A. A. Christian, a Philadelphia man, but with his farm at Greensboro, Md. This now world famous hen is not only part of this English blood but is a living monument to the science of breeding and should for all time put the quietus on the foolish claims of some that production, or, the ability to lay heavily can not be bred into hens. It is entirely correct to say the Lady Eglantine was deliberately made by her owner—made for the purpose of laying eggs.

Just what sort of laying 314 eggs in one year is, can best be comprehended by comparing the average number of eggs laid by the hens on the farms of this State as gathered by the census enumerators for the census of 1910, viz; 68 eggs, 314 eggs and 68 eggs! It would seem there is still a great deal of missionary work to be done among our farmers if their hens are to lay anything approaching a maximum yield—your Chairman would urge that the individual members of this State Board of Agriculture would do their mite of this sort of work by the good example of tolerating nothing but pure-bred poultry on their home farms.

The wet summer of this past year found at its end probably the best grown lot of chickens seen for many a year. This was true on farms, on egg farms and large poultry plants or wherever growing chickens were enjoying free range. Chickens matured early, grew big frames and broad lustrous feathers, either directly due to the wet season or indirectly to the abundance of succulent growing things and insect life.

Highest returns this year to any of our egg farmers was 63 cents per dozen with a break in price the earliest yet known. Fall eggs, not winter eggs, now reach maximum prices, probably because, first, more chickens are hatched early; second, more storage eggs come out early.

Your Chairman within the last year made a return trip to the Pacific coast and diligently employed the opportunity to study poultry possibilities and prospects not only there but enroute over two widely divergent routes and is more fully convinced than ever that Pennsylvania offers as many opportunities to make good with poultry as any other state or section.

The CHAIRMAN: Is there any discussion of this report? If not, it will be received and entered in the proceedings. The next is the report on Forests and Forestry, by Mr. Irvin C. Williams, of Harrisburg.

MR. GEORGE H. WIRT: Mr. Williams, unfortunately, was called out of the city on other business and asked me to read his report. I might say that, as you have undoubtedly studied the agricultural conditions in this State, you know full well that according to statistics at least, of course, you know that some statistics do tell the truth and some do not, but at any rate, statistics show that the actual acreage of land in Pennsylvania under cultivation is gradually decreasing. A certain amount of this, perhaps, is taken up by building sites, quarries and uses of that kind, but it is a tremendous indictment against the State of Pennsylvania that something over four million acres of so-called agricultural land is now in an unproductive state. The farmers of this State are paying taxes upon that land and getting nothing from it. It is not fair to say that it is non-agricultural land; much of it could be cultivated, much of it could be made to produce agricultural crops. The fact of the matter is that it is not now producing agricultural crops and probably will not be needed for that purpose for years to come. The only sensible thing to do with such land is to reforest it, and the State of Pennsylvania, the Department of Forestry is growing seedlings and is now permitted to distribute them to farmers free of charge, except for the matter of transportation from the nursery to the farmer's station, and we are more than glad to be able to supply our farmers with seedlings and give them assistance and advice in the matter of planting their waste lands so as to make them productive and so as to reclothe these four million acres of land which is taxed to them, to make that land productive.

Mr. Wirt then submitted the following report:

REPORT ON FORESTS AND FORESTRY

By IRVIN C. WILLIAMS

The record of the legislation in 1915 for forestry in Pennsylvania is a satisfactory one, evidenced by the passage and approval of 8 different acts of assembly.

Under the new laws, land suitable for forestry purposes held in ownership by the counties must be offered for sale to the Department if required. The price to be paid is the amount of taxes due, plus interest and costs.

For a number of years forest trees seedlings were sold by the Department at cost of growing. Many thousands of young trees were distributed over the State by these means and paid for by citizens interested in tree planting. The new act permits the Department of Forestry to distribute excess trees, in stock, for the asking, under reasonable provisions relating to planting, growing, and subsequent

sale. This puts the distribution of trees in line with the distribution of fish and game, which has long been done in a similar way at the expense of the State.

In an attempt to procure a more efficient execution of the laws relating to game, fish, and forestry, a new act of Assembly requires all the employes of these three departments to protect the interests and assist in executing the laws of others.

When the Department of Forestry was established in 1901, a limit of $5.00 per acre was set for the purchase of lands. This was a safeguard which we believe was properly inserted in the law at the time. The problem of buying lands for State forestation then was a new one and such a check relieved the Department of an untold probable amount of pressure which otherwise probably would have been brought upon it to purchase lands at high price. At the last session of the Legislature the limit of price was increased from $5.00 to $10.00 per acre. This will enable the Department to purchase a number of small interior holdings actually worth more than $5.00 per acre, and thus enable a better consolidation of the State Forests. This is valuable from the viewpoint of protection as well as from desirability of solidified land ownership.

The experiment of the Department entering into co-operative relations with the act of 1913, has been a success. The Department is now actively co-operating with the Pocono Fire Protective Association and with the Central Forest Protective Association, each of which organizations are interested in large areas requiring better protection and ultimate forestation. An amendment to the law of 1913 enlarges the powers of both the Department and the local organization and gives them a better working program.

In order that local development may not be hindered by the presence of large bodies of State land acting as a barrier to a greater or less degree, the recent Legislature enlarged the powers of the Department with respect to granting rights of way. It ought not to be the policy of the State Government to set up any obstruction in the path of private local improvement, especially when such improvement is dependent upon a right of passage through lands which otherwise would be closed to entrance.

The school code of Pennsylvania provides for a State School Fund, to which moneys shall be added from time to time as they are derived from various sources. Originally it was provided that 80% of the net proceeds of the State Forests should be added to this fund. The difficulty of calculating net proceeds when the fifty or more State Forests are taken into consideration, as well as the reduction from 100% to 80% of these proceeds as an addition to the State School Fund, would have continued to operate against the increase of that fund. The Department of Forestry has always felt that the State School Fund might well receive the entire proceeds derived from State Forests, and in a few years these proceeds must, in the nature of things, become large, thus accelerating this most valuable fund to a larger and better degree. By an amendment passed to appropriate sections of the school code, all proceeds from the State Forests are paid immediately into that fund. The revenues of the Department from its inception to date are in the neighborhood of $125,000. By an act of appropriation, $80,000 of this amount was

specifically appropriated and applied to the State School Fund. With further forest development and the marketing of forest products, the proceeds will increase from month to month. Those paid into the Treasury during the month of December last past and immediately credited to the State School Fund, amounted to $2,090.03.

By all odds the most valuable piece of legislation procured at the last session was the forest protection code, which completely revises the system of forest fire wardens, establishes a bureau in the department to take care of forest protection exclusively, places at the head of the bureau a person competent to do this work, who devotes his time exclusively to protection, and who has since been actively engaged in the revision of the whole system.

Forest fires are still prevalent in Pennsylvania. The average size and average damage wrought by fire is gradually being decreased. With a better fire fighting system and with a greater awakening to the necessity of preventing and extinguishing fire, Pennsylvania will surely soon be able to take her position among other forested states who have larger appropriations for fire protection and are reducing the fire problem to a very small matter. The density of Pennsylvania's population, the diversity of her industries, and the unparalleled opportunity for permitting fires to burn, coupled with a certain viciousness of disposition which is still found in individuals as well as in groups of men, along with the difficulty in the majority of cases and at times the utter impossibility of procuring evidence sufficient to secure a conviction of offenders, when considered in connection with the aggregate areas burned and the resulting loss from fires, is a source of satisfaction at least, although the Department will never rest satisfied with its efforts until it is in a position to maintain complete and efficient control. The Department of Forestry is dependent entirely upon legislative appropriation for means to do this work, and we can only say, as has been said on numberless previous occasions, that this problem is one resting wholly upon the Legislature. Without means the Department can do nothing. With adequate means it can equal, and we believe exceed, many of the other states. A forest fire appropriation of $45,000 allowed for two years in 1915, is utterly inadequate to meet our needs and conditions. The records of the Department show that during 1915 there were 1,104 forest fires reported upon by the forest fire wardens.

The record of accomplishment for the Department of Forestry to date stands as follows:

It has purchased and paid for out of legislative appropriations, 1,008,140 acres of land, costing an average price of about $2.28 per acre.

It has educated foresters to care for this land, now divided into 54 forests, each of which is in the care and administration of a technically trained State Forester.

Forest administration is dependent upon roads, trails, fire lanes, telephone lines, observation towers, a protective force of forest rangers, and an interested group of people in its neighborhood who are willing to lend a hand at a moment's notice to prevent destruction by fire. The foresters and their assistants to date have built over 3,500 miles of travelable roads, trails, and fire lanes. Upwards of 250 miles of telephone lines are constructed. These connect

rangers' homes with forest headquarters, and these again with the general telephone system of the State. Foresters are doing improvement work and taking out undesirable material and selling it for the best price to be obtained. The revenue of the Department is largely derived from this class of sales.

The foresters and their assistants have planted upwards of 18,000,000 seedling trees of good species, and have covered more than 8,500 acres, otherwise denuded, unprofitable land.

The State Forests have been thrown open to become the camping ground and recreation places of the citizens of the State. What are known as permanent camp sites, under formal lease for a period of ten years or less, may be had for a trifling annual sum. Temporary camp sites are permitted without charge. In the case of the former, there is exclusive use by the lessee of his camp site, with the privilege of building upon it such a structure as meets the approval of the Department.

The whole force of the Department is interested in carrying the knowledge of its work to the people. Educational efforts are under way in all parts of the State. Foresters and rangers take an interest in the school children and afford them facilities for enjoying the State Forests. The newly formed Bureau of Education within the Department will collect statistics and information, and through the newspapers, principally those in the counties and rural neighborhoods, will keep the people informed of the weekly progress of events.

The Department of Forestry regards itself as the servant of the people. It is ready at all times to afford such assistance with respect to the scope of its business. It is particularly desirous of awakening a greater and better sustained interest in farm woodlots. The owner of any farm having upon it a woodlot which is in need of improvement or other treatment, may, for the asking, have the advice and direction of the Department in its handling. While our facilities at present may be limited by lack of means and lack of men, the desire to help is constantly with us.

The Department has recently undertaken topographical surveys of its forests and a complete delimination of its boundaries. The latter has been going on for a number of years and boundary surveys are in their incipiency but to date four forests have been satisfactorily covered. With topographical work goes the taking of an inventory or the making of a stock survey, so that it will soon be possible to know what amount of material is contained within each forest, its character and its value.

The Pennsylvania forests are not set aside as reserve areas and locked up. The people of Pennsylvania are not denied participation in the general use of the woods; but to the contrary, as above stated they are specifically invited to use these woods under a few reasonable regulations necessary for their proper protection.

The establishment of the State Forests and their proper development will result in two things of great value in the future to Pennsylvania: First, a new wood supply, and secondly, the protection and development of our water resources. The question of a pure and adequate water supply is already confronting us in a very noticeable way. The continued settlement of the State, the increase of popu-

lation density, the establishment of new industrial plants will cause this problem in the near future to be one of still greater importance. The Department is now authorized to grant to municipalities the right to receive water supply from State lands, when so situated that it may be economically derived.

The Forest Academy is still educating young men for the forest service. For proper administration, Pennsylvania foresters are at present too few. With intensive administration the forest areas in charge of each forester must be reduced. This requires more foresters, and they are specifically educated for this purpose at the State Forest Academy.

Because of her ribbed and mountainous character, Pennsylvania has a large area of land suitable for no other purpose than the growing of trees. At least 8,000,000 acres of land of this character can scarcely ever be made to produce anything else of importance. A larger proportion of this area should be put under State Forests than at present. Therefore, purchases of land for forest purposes by the State should be continued through a liberal and well sustained policy. Forest land in State ownership is better protected and better developed than ordinary wild mountain land in the hands of the private owner. Lack of capital and of disposition permits private land to lie wild and devastated. No Pennsylvania acre should lie waste, but ought to be made to produce its full quota of return for the benefit of the whole State. Now forest planting must be continued in areas where trees cannot grow because of destructive lumbering, forest fires, and the removal of all seed trees. Our plantings should be largely increased and well they might be, were the means at hand to do the work. This Department may and ought to become one of the most useful adjuncts of the State Government; but there is no possibility of its becoming so unless it is better sustained and permitted to enjoy a wider and more comprehensive development by intelligent legislative action.

The CHAIRMAN: Gentlemen, you have heard the report; is there any discussion?

MR. KIEFER: Are farmers who are not members of this Association permitted to discuss these papers? This is my first appearance in the Association. I have been a farmer for some years and feel strongly on that paper and would like to discuss it.

MR. HUTCHISON: I move that the gentleman be accorded the privilege of the floor.

(The motion was seconded and adopted).

MR KIEFER: I am Mr. Horace Kiefer. I want to introduce myself as being the son of a very old friend of the gentleman from Schuylkill county. I was born in Schuylkill Haven. I feel very strongly, ladies and gentlemen, on this forest fire business. For six years in the counties of Cumberland and Adams, I had charge of 40,000 acres of timber land for Julian Porter and old Tom Scott and others of this State. We had, up to the time I went there, forest fires that destroyed from two to five thousand acres of timber a year, and as high as three to five thousand cords of

wood. I was responsible; I was sent there for that purpose, and to run their iron mines, manufacture their charcoal iron, and operate a railroad of thirty miles. I found it was organization that was necessary to prevent those fires, and I went about the organization, and after that, the four years I was there my total loss was 200 cords of wood, with proportionately small areas of forest fire.

Several years ago, I was in the State of North Dakota, when the great fires of the Pacific Coast, lasting from three to six weeks out there, darkened the sky for two weeks in the eastern and central parts of North Dakota, so that you could not see the sun for that length of time. Railroads were disorganized. The Great Northern, the Northern Pacific and the Canadian Pacific could not run a train for nearly a month through part of that district. They gathered up all the track hands they could get, they did everything possible to check that fire, and hundreds of lives were lost by men who got into that terrible maelstrom and could not get out. After the whole thing was over, I sat down and studied the matter out. I got statistics which I procured from the Nation and read up on them thoroughly, and with my own experience I felt that all this destruction from forest fires could be prevented by one thing, and that was organization, the same organization I had at Pinegrove Furnace over here in Cumberland county. I prepared a statement and put it in the hands of every Governor of a State as well as your Governor in Pennsylvania, and I asked for practically the same organization that was in existence with regard to the life saving stations of the National Government. There we have along the Atlantic Coast dozens of stations for the saving of life in times of storm. We have the same sort of stations up on the Lakes. When the Lake people get into terrible trouble and have big storms, there are instances of record where special trains have been sent from the Atlantic Ocean to the Lakes and vice versa, to help out those stations and to save property and life.

Those fires on the Pacific slope, on the Cascades and Rocky Mountains, were not stopped until the United States sent soldiers in there, an organized body of men. We have today in the United States and in every State, especially in Pennsylvania, a large body of state militia that could be used for that purpose when we have large forest fires, and we have had them every year and they do not seem to me to be on the decrease any. Why shouldn't the State employ its State militia to go and fight those forest fires systematically on a special train, and put hundreds of men, or thousands, if necessary, into service and put those fires out systematically and in order at once? Why should not the United States army—and I am the son of an army officer, every member of my family is in the United States army—why should not the United States Army be employed in putting out forest fires instead of camping around on parade grounds, doing nothing from one year's end to another, and drawing large salaries—the officers? Why should not they be trained in the system of fighting forest fires? I could go into the method, showing how it is done, but it is not necessary here; I simply want to impress on this body the idea of trying to get some legislative action along the line to employ our State militia and national soldiers in the method of fighting forest fires, the same as the life saving people protect property and life along the coast.

I want to get back now to this dog question, on the paper that the gentleman read here a while ago on sheep raising. I have four or five hundred acres of land not far from here, and I bought a good bit of timber land, bought some recently, with the view of raising some cattle and sheep. The dogs have practically destroyed every sheep and every lamb within a radius of twenty miles of Harrisburg. It is not altogether the farmer's dog, but it is the city man that keeps a dog for the purpose of hunting, probably thirty or sixty days in the year, that will turn him out, or they get out along the mountain and start from the Susquehanna River over to my old neighbor's place at Pinegrove and clean up everything. I have known within one night, within a distance of ten miles, twenty-five ducks, three head of calves and fifteen sheep killed. That is why the people are crying about the high price of living and paying twenty-five cents a pound for mutton chops, and they deserve to pay it. We cannot raise sheep here in Pennsylvania. Even if we fence our mountain land up, it does not protect the sheep, it does not protect the calves. The dogs get through the fences, get over them, and they become so wise and educated in their methods that it requires a man to set up all night with them, as well as all day, and I think we ought to ask this Association here to adopt some sort of a resolution to impress the people of the State of Pennsylvania thoroughly about this dog business. I thank you all very much.

MR. KERRICK: I would like to ask the gentleman who read this paper, if I understood him correctly, the majority of the fires are caused by farmers?

MR. WIRT: I made no such statement and would not like to especially in an organization of this kind. (Laughter.) In answer to your question, definitely, the causes as returned by our forest fire wardens, run something like this: Out of the 1,104 fires that we have reported, there were 383 that the fire wardens reported as not knowing any cause. The chances are that the majority of those were caused by smokers, people who travel back and forth through the woods. Some perhaps have been set by saw-mils; some of those perhaps by railroad engines. As a matter of fact, in that unknown bunch you may say that all sorts of causes were classified. The fact of the matter is that the fire warden was not on his job soon enough to find out just what did cause the fire. That is where part of this system comes in. There were 272 fires definitely reported as having been caused by railroads.

Now I know I have appeared before this Association for the last four or five years, and nearly always have it thrown at me that the railroad causes most of the fires. The fact is that the railroads do not cause most of the fires; they cause about 25% of the fires reported each year. Brush burn, which is I suppose in 99% of the cases done by farmers, was reported as the cause of 159 fires, if I remember rightly. Hunters and fishermen, 105; lumbermen, that is, from their saw mills or saw mill engines—I mean the tram roads—I think 78, something like that; but totalling the brush burn, the lumbermen and the ones reported as hunters and fishermen, we have 268, almost as many as are definitely reported as coming from the railroads.

Now I contend, and I believe absolutely, that the majority of the fires which we have in Pennsylvania are due to three things. You may assign certain other more definite causes perhaps, but these three things are the causes of forest fires in Pennsylvania: In the first place, ignorance—now I do not mean that an educated man, a highly educated man, will not set a forest fire; I do not mean that kind of ignorance; I mean ignorance as to the necessity for carefulness with fire in the woods and ignorance as to the results of what those fires may bring about. In the second place, carelessness. Ignorance, of course, breeds carelessness, but a great many farmers, if you please, and a great many hunters and fishermen and a great many of all classes of our people go into the woods, automobilists, tourists of all kinds, go through the woods either in their cars or on foot, and very carelessly drop their matches, cigarette stubs, cigar stubs, pipe ashes, leave their camp fires without extinguishing them, etc., with the result that forest fires arise; and the third cause is indifference. In its civilized state, such as Pennsylvania is, what excuse have we for allowing a forest fire to burn for one week before anybody gets after it? Why, it is a shame. And yet I want to put it right up to you farmers that some of you, perhaps not anyone here, but some of the farmers in the State of Pennsylvania, I know, would sit and watch a forest fire for a month before they would go and help to put it out, and they will say so, and when our officers go and ask them to help, the language they get is not very pleasant to listen to, and yet the farmer does not realize that the burning of a hillside back of his farm may mean a very large reduction of his crops the next year.

I have estimated on a minimum figure that, from the returns which we have turned in every year, the State of Pennsylvania is suffering a loss of anywhere from $20,000,000 to $50,000,000 a year simply because of the fact that a certain acreage is kept non-productive that should be growing timber, and as a result of the loss of the timber which might be growing and the labor which might be expended upon it, the State suffers to the extent of between $20,000,000 and $50,000,000. The annual direct loss, as returned by our fire wardens, which I think is a low figure, is over $1,000,000, and what the indirect loss is to farmers' crops all over the State, to industries and people generally as a result of floods and all of the unsatisfactory indirect effects of forest fires, no man in God's world can ever estimate it, but it is more than $50,000,000. I tell you the people of the State want to wake up to this tremendous problem, and the farmers or the fellows who are back along the hillsides are the men who should realize these things and should help to see that the people who owned the woods, the people who used the woods, should be careful and that when fires occur, that they should be immediately extinguished and not left to go until they reach a certain size or a certain area before anybody pays any attention to them.

I want to say right now, as the head of this new Forest Fire Protection Bureau, if any of you happen to run across any of our fire wardens who are not on the job, I want you to tell us about it. The gentleman was right when he said that the solution of this problem was organization; that is a very large factor, but I want to tell the gentleman that, with the best of organization, unless we have the

co-operation of every well-thinking man and woman in the State of Pennsylvania our organization would not count for much. We have got to have the support of everybody. I know we have that land down there now that the gentleman had charge of, and we have an organization just as complete as his was and we have the land from there clear down to the Maryland line under a careful, systematic organization for forest protection, and yet the fact of the matter is that this spring something like 5,000 acres burned over. Why?

A Member: And last year too.

MR. WIRT: Because of the fact that, with all of the organization, one man did not co-operate. One man did not co-operate and he broke the whole organization. State militia and the whole United States army would not have stopped that fire under those conditions that existed at that time. The wind blew the fire from one hillside clear across the valley to the other. The fault of the matter was that the thing was stopped when it was small; that is where our organization and when our co-operation has to come in. A certain amount of fires are going to burn, a certain amount of fires are bound to arise along railroads, specially; they have a certain operation which they must perform; a certain number of railroad fires can and will be stopped, are going to be stopped; a certain amount of fires are going to escape from brush piles, they cannot help it, with the very best of care sometimes, if a man is foolish enough to set a brush pile on fire on a windy day, the fire is going to get away; but the thing to do is not to go home and say we will let it go until it gets on the other side of the mountain, then we will fight it; the thing to do is to get to work at once and you will only need five or six men in the immediate locality in which the fire is going to burn, but by the time we could get a company of State militia in there, the local men will have the fire out. The farmers are responsible for a number of fires, I would not say they are responsible for a large number or for the greatest number.

MR. KERRICK: Whose duty is it to observe that the railroads observe the regulations?

MR. WIRT: Everybody's.

MR. KERRICK: I have been told that, while the railroads put in screens to prevent the sparks from flying out of the smoke-stacks, the engineers or firemen or both, will take them out as fast as they go in. There ought to be some man to see that they comply with the regulations of the law. We always thought that the railroads are the prime source of the fires and I believe today that they are the biggest sinners we have.

MR. WIRT: I know that the farmers generally blame the railroads for the majority of the fires; but, nevertheless, they have not produced the evidence yet and the men on the ground have not produced the evidence yet. The fact is that for a number of years those of you who have followed legislation in Pennsylvania realize that at every session some bills come in which try to make the railroads responsible for all forest fires that occur along the right of way, and

a number of other bills placing certain obligations and duties upon railroad companies, but you have also noticed, if you have kept in touch with legislation in Pennsylvania, that such bills either die in the Committee or shortly after. The fact of the matter is that the Department of Forestry has been attempting to place the forest fire problem on a definite, satisfactory, legislative basis since 1895, when Dr. Northup first drew up his forest fire bill. Forest fires have been talked about since 1782, and we had some legislation on forest fires even when Pennsylvania was a province, but with all this legislation, the Department of Forestry in the State has been waylaid and nothing very definite accomplished; but further, at this last session—how it ever happened I don't know, it was the biggest surprise to me, we got an act through the Legislation which made it possible for the Department of Forestry to formulate certain rules and regulations, which, after they had been passed upon by the Public Service Commission, would have to be lived up to by the railroad companies. Whether it was through my good graces in talking with some of the railroad officials, or just what providential influences aided us, I do not know, but at any rate the railroads did not come into this legislature and attack our forest fire bill; they let it go through.

Now the fact of the matter is this, that the large railroads of the State of Pennsylvania realize the trouble and danger of forest fires just as much as we do; the large railroads and efficient railroads, and they are co-operating with us right now without rules and regulations, but it is the little dinky railroads that we are going to make these rules and regulations for between this and the middle of the summer, and then we are going to see that they are enforced, but we do believe this, gentlemen, and in answer more directly to the gentleman's question, we do not believe that it should be the policy of the State Department of Forestry to employ inspectors of railroad engines.

The Department of Forestry is not a department of engineers; we are a department of foresters; we do believe that when certain rules and regulations are put into effect which will tend to reduce the number of forest fires, there should be an accompanying proposition; we now have in our act that when the railroad company sets fires, even after they have put into effect these rules and regulations which we have put upon them, and we can prove that they are responsible for the fire, they are liable to damages without any question as to whether they have a hole in their smokestack or not; in others words, we put the proposition up to the railroad company just like we do to the farmer. If you are careless in setting a fire or causing a fire to spread from your fire and do damage to somebody else, you are certainly responsible and it is simply shoving the responsibility up to the right fellow. Let every man bear the burden of his own responsibility and his own actions. Now that is just as fair for the railroad company as it is for the other fellows.

The unfortunate part in the proposition which you men have brought to us time after time has been,—well, here a farmer will go out and set fire to his brush or he will do something in his woodlands where he is directly responsible. The fire will go from his land on to

the other fellow's land and the other fellow will suffer damage; I am responsible for the fire and you can get me, I'll pay the damage, pay the suit, pay the costs and pay the penalty; but in the case of the railroad company, heretofore it has been a case of not being able to blame the railroad company because of the fact that in a court of law the jury and the judge as well would always say, "Now, did you see the spark come out of the engine and come over and light on the leaves and the fire start?" "No." "No case;" and we were ruled out of court.

I had five cases—or had on my desk in the last month—where we had statements from our fire wardens—if I get too lengthy, just cut me off—to the effect that these fires were caused by railroad engines, certain men saw them. We went right back and said, "Will such and such people who saw these fires start, go before a jury and swear to the fact that they saw the fire start?" "No, because certain men are employees of that particular railroad company." Now what are you going to do? In other words, you have got the evidence, but you don't have it; you have got the evidence, but you can't get the men to go into court and swear to what they say they know. In other words, they would lose their jobs.

What we propose to do is something like this, provide for a sort of co-operation between railroad companies and land owners along the right of way. It is possible to make what are known as fire breaks on either side of a railroad where the forest land is liable to fire. The railroad companies in a majority of cases—as a matter of fact, in Centre county, the New York Central Railroad Company this last fall cleared up, on both sides of the railroad, a strip of 300 feet at their own expense in order to prevent the spreading of forest fires from their engines, not by any law or regulations, but of their own free will and accord at the request of one of our officials, did it at their own expense. We expect to go after all of the railroads on that very proposition and where they do not do it, we are going to make it interesting for them. And on the other hand, where the individual land owner along such railroad wants to maintain a fire hazard so that every time an engine goes by there, he can sit and watch and actually see the sparks fall and then go and collect damages from the railroad company every year—where that fellow is not going to co-operate, we are going to make it interesting for him too, because in our new law, we have this very important clause inserted, that where certain conditions exist, either by reason of circumstances as they exist on the ground or by reason of the operation of any machinery, there is a fire risk so that such conditions or such operations may become the cause of damage to adjoining property, we can declare a thing a public nuisance and issue orders as to when that public nuisance must be abated, and if it is not abated within that certain length of time, a penalty for every day the nuisance still remains may be imposed.

Now we believe that we have the proper club, but we expect to go about it, not in a hammer and tongs fashion, but rather in the way of requesting co-operation from the people concerned, and I think we are going to get further that way than we will under some of the other legislative enactments that have been proposed and possibly, for the railroad companies at least, fortunately were never passed.

The CHAIRMAN: I am requested to announce that the photographer is at the front of the building and would like to have your smiling faces look into his instrument for a few minutes, after the adjournment of this meeting. The meeting is now adjourned until 1.30 this afternoon.

January 27, 1916, 1.30 P. M.

Vice President Studholme in the Chair.

The CHAIRMAN: I would like to take this opportunity to thank the members of the Board for conferring the honor upon me, as one of your Vice Presidents. I esteem it a great honor to assist this Board in any way. I represent a county that has been very fortunate in her gifts from Nature, McKean county. We have had wonderful forests of pine and hemlock and beech and maple trees above the surface, and beneath the surface quantities of oil and gas, and it is only within recent years that we felt the necessity of developing our agricultural resources. I want to state to you the remark that our former Deputy Secretary made at our last institute held in McKean county; he said that the Department of Agriculture had had more inquiries for information from McKean county during the year 1915 than from any other county in the State of Pennsylvania. I have no doubt that some of you men might think, "Well, you certainly need all the information you can get on agricultural lines in McKean county;" and we realize this, but we have got to the point where we are willing to admit that we need the information and we have asked for this information. And what is better yet, we are beginning to apply this knowledge that we are gaining to our farms so that in the near future we hope to be able to take our stand beside the other counties in the northern tier, Warren, Crawford, Tioga and Bradford, and be counted as one of the agricultural counties of this State.

First on the program for this afternoon is reports of Standing Committees and Specialists, continued, and first, comes the Report on Feeding Stuffs, by Dr. George G. Hutchison.

MR. HUTCHISON: Now the hardest thing for me is to read; my mind works rather rapidly and when I have to read it is a little tiresome to me and I'd a great deal rather talk. May be you have realize that by this time, some of you, but I will start off. I am not going to read all this paper this afternoon, but I want to bring out some of the points in it. I want to state that I am under great obligations to the Chief Chemist for his aid and help in getting together the data we have here. He and I are sort of co-partners in the work we are doing in the department, you couldn't separate the chemist from me or myself from the chemist in our line of work, and he is a very modest gentlemen and I will say this to you, that the State owes a great deal to the Chief Chemist, Prof. Kellogg, for the interest he

has taken in our work. That is not written down here, I just want to pay a tribute to him while he is living because he may be a long time dead you know.

Mr. Hutchison then presented the following paper:

FEEDING STUFFS REPORT

By GEO. G. HUTCHISON

The work of the Department in enforcing the law regulating the sale of Feeding Stuffs during the year which has just closed has continued along the lines as in previous years, and as each year goes by the need of such a law becomes more apparent. It would be difficult to imagine what the condiiton or character of the Feeding Stuffs sold in Pennsylvania would be if we did not have such a law as is now on our statute books and which is being rigidly enforced. While much progress has been made in bettering the feeds sold in the State, it is still necessary to be on the watch for new feeds or by-products which from time to time, are being utilized for feeding purposes, to watch out for adulterants, and to make sure that the consumers of the State are receiving feeds correctly guaranteed and the full value of their money paid out for the same.

There are thirty-six (36) states which have feeding stuffs laws, five (5) that have general food laws which, in a measure, regulate the sale of feeding stuffs, and seven (7) which have no laws at all. In these states, therefore, which have no laws, a few of which are close to our borders, it is easy to imagine the character of the feeds sold in such states and it sometimes occurs that a feed intended to be sold where there is no regulation gets into Pennsylvania, as is shown by the fact that recently we found a certain brand of feed which had come into Pennsylvania which contained about 40% of ground peanut hulls. This is an instance of how the consumers are being protected by our own feeding stuffs law and by a special arrangement with the United States Department of Agriculture on interstate shipments. The Chief Chemist upon finding such a brand of adulterated feed being sold can report the case to the Federal authorities and thus our own Department working, with the Federal Department can protect the consumers from such frauds. The usual number of feeding stuffs registrations, which show about 1,200 different brands of feeds being sold in the State, are filed each year which assists greatly in enforcing the provisions of the act and enables us to keep in touch with the character of the various brands being sold.

One form of misrepresentation which the Department is endeavoring to correct, is the use of the so-called "sliding guarantees" for protein, fat and fiber which are not only misleading and not in agreement with the requirements of the act but which, in many cases, does not show the true composition of the feed, as is often found by analysis. Some idea of the importance of the work to the farmers and con-

sumers of our State can be gained from the fact that according to the Bureau of Statistics of our Department, there are the following number of heads of livestock within the borders of our State.

Dairy cows,	952,000
Horses,	596,000
Mules,	46,000
Other cattle,	644,000
Sheep,	806,000
Hogs,	1,186,000
Making a total of,	1,230,000

From what statistics can be secured, at least 600,000 tons of feeding stuffs are sold annually in the State, the greater portion of which is imported from other states; having a total valuation at a low average price of $25. per ton, or fifteen million dollars. The amount of feed required to feed such a large number of livestock for one year would total at least, on a conservative estimate, 6 million tons. While Pennsylvania is a large agricultural state and produces great quantities of feed within its borders, it does not produce enough to meet this enormous need, which is one explanation of why such great quantities of feeds are imported from other states for home consumption. As the cities increase in size and the country developes along this line, the area of land devoted to producing food usually decreases which, in a large measure, has made the demand for mixed feeds so great.

Fifteen years ago when the feeding stuffs industry first commenced, this condition did not exist and many valuable by-products were thrown away as useless, but as the demand for feeds of all sorts has increased, every possible by-product that could be used for feed has been conserved and utilized, sometimes as straight feeds and in many cases as ingredients in the many brands of mixed feeds. From the reports made to this body from year to year, you have become familiar with most of the feeds or by-products now being used, but from time to time, new products are being utilized and during the past year the feeding value of three by-products has been discovered and these are now being used, namely, yeast and vinegar, dried grains, ivory nut meal and cocoa shell meal.

The yeast and vinegar dried grains were, before the recent embargo on exportation, being sold largely abroad but during the first part of the year our Department discovered that this product was being sold in the State as straight distillers' dried grains at about $7 less per ton than the usual price for distillers' dried grains. After an investigation by our chemists and agents, and a visit to the plants where this material is being produced, it was discovered that instead of being distillers' dried grains it was the residue of the dried grains left from the manufacture of yeast and vinegar. As a result of this work, this product is now being sold in the State as yeast dried grains properly guaranteed for protein, fat and fiber. This material is a valuable by-product feed although it does not contain quite as much value of distillers' grains from corn but contains a little more than the distillers' grains from rye.

The ivory nut meal, referred to, is an interesting product as it is the ground cuttings from the ivory nut from which buttons are made. This material has a bony, hard structure, but when pulverized and ground into a fine meal, it possesses some feeding value and a portion of it is digestible. It has the following composition: Protein 4.50%, fat 0.85%, and fiber 8.30%. The law does not prohibit the sale of this particular material, and, therefore, we can make no objection to its use although in every feed on which it is used as an ingredient, it must be stated on the sacks or on the tags that it forms a part of the feed.

The cocoa shell meal has been used for about a year as an ingredient in mixed feeds and is the ground shells left from the bean from which cocoa is made. This product has the following average analysis: Protein 16%, fat 3.50%, fiber 12-14%. A study is now being made of the value as a feed of garbage tankage, and this may be placed on the market as an ingredient for mixed feeds later, although the process of manufacture has not developed far enough to warrant its being offered for sale. Other by-products of interest which some people are trying to mix in feeding stuffs is peat, which is sometimes called humus. This material contains a large proportion of sand and insoluble matter and the Department has refused to permit the sale of any feed in the State which contains this product as an ingredient.

The Department has received splendid support and co-operation in the work being done along this line, from the dealers and feed manufacturers of the State, and also of the United States. A few years ago an organization was formed, called the Association of Feed Control Officials of the United States, made up of the officials of each State which were in charge of the enforcement of the feeding stuffs laws. Our Department has been represented at these meetings by the Secretary of Agriculture, the Chief Chemist and the writer. Much valuable information has been secured as a result of these meetings, as special attention is paid to the study and discussion of the various by-products being used and definitions have been adopted for practically every product known to the trade. The definitions which, up to date, have been adopted are as follows and will be included in the report, but I will not take up your time in reading them now.

MEAL is the clean, sound, ground product of the entire grain cereal or seed which it purports to represent.

CHOP is a ground or chopped feed composed of one or more different cereals or by-products thereof. If it bears a name descriptive of the kind of cereals, it must be made exclusively of the entire grains of those cereals.

SCREENINGS are the smaller imperfect grains, weed seeds and other foreign material having feeding value, separated in cleaning the grain.

ALFALFA MEAL is the entire alfalfa hay, ground, and does not contain an admixture of ground alfalfa straw or other foreign materials.

BLOOD MEAL is ground dried blood.

MEAT SCRAP AND MEAT MEAL are the ground residues from animal tissue exclusive of hoof and horn. If they contain any con-

siderable amount of bone, they must be designated MEAT and BONE SCRAP or MEAT AND BONE MEAL. If they bear a name descriptive of their kind, composition or origin, they must correspond thereto.

DIGESTIVE TANKAGE is the residue from animal tissue exclusive of hoof and horn, specially prepared for feeding purposes by tankage under live steam, drying under high heat, and suitable grinding. If it contains any considerable amount of bone, it must be designated DIGESTIVE MEAT AND BONE TANKAGE.

CRACKLINGS are the residue after partially extracting the fats and oils from the animal tissue. If they bear a name descriptive of their kind, composition or origin, they must correspond thereto.

BREWERS' DRIED GRAINS are the properly dried residue from cereals obtained in the manufacture of beer.

DISTILLERS' DRIED GRAINS are the dried residue from cereals obtained in the manufacture of alcohol and distilled liquors. The product shall bear the designation indicating the cereal predominating.

MALT SPROUTS are the sprouts of the barley grain. If the sprouts are derived from any other malted cereal, the source must be designated.

BUCKWHEAT SHORTS OR BUCKWHEAT MIDDLINGS are that portion of the buckwheat grain immediately inside of the hull after separation from the flour.

CORN BRAN is the outer coating of the corn kernel.

CORN FEED MEAL is the sifting obtained in the manufacture of cracked corn and table meal made from the whole grain.

CORN GERM MEAL is a product in the manufacture of starch, glucose and other corn products, and is the germ layer from which a part of the corn oil has been extracted.

GRITS are the hard, flinty portions of Indian corn, without hulls and germs.

HOMINY MEAL, HOMINY FEED, OR HOMINY CHOP is a mixture of the bran coating, the germ and a part of the starchy portion of the corn kernel obtained in the manufacture of hominy grits for human consumption.

CORN GLUTEN MEAL is that part of commercial shelled corn that remains after the separation of the larger part of the starch, the germ and the bran, by the processes employed in the manufacture of cornstarch and glucose. It may or may not contain corn solubles.

CORN GLUTEN FEED is that portion of commercial shelled corn that remains after the separation of the larger part of the starch and the germ by the processes employed in the manufacture of cornstarch and glucose. It may or may not contain corn solubles.

COTTONSEED MEAL is a product of the cottonseed only, composed principally of the kernel with such portion of the hull as is necessary in the manufacture of oil; provided that nothing shall be recognized as cottonseed meal that does not conform to the foregoing definition and that does not contain at least 36 per cent. of protein.

PRIME COTTONSEED MEAL must be finely ground, not necessarily bolted, of sweet odor, reasonably bright in color, yellow, not brown or reddish, free from excess of lint, and must contain at least 38.6 per cent. of protein.

CHOICE COTTONSEED MEAL must be finely ground, not necessarily bolted, perfectly sound and sweet in odor, yellow, free from excess of lint and must contain at least 41% of protein.

GOOD COTTONSEED MEAL must be finely ground, not necessarily bolted, of sweet odor, reasonably bright in color, and must contain at least 36 per cent. of protein.

COTTONSEED FEED is a mixture of cottonseed meal and cotton seed hulls, containing less than 36 per cent. of protein.

COLD PRESSED COTTONSEED is the product resulting from subjecting the whole undecorticated cottonseed to the cold pressure process for the extraction of oil, and includes the entire cottonseed less the oil extracted.

GROUND COLD PRESSED COTTONSEED is the ground product resulting from subjecting the whole undecorticated cottonseed to the cold pressure process for the extraction of oil, and includes the entire ground cottonseed less the oil extracted.

FLAX PLANT BI-PRODUCT is that portion of the flax plant remaining after the separation of the seed, the best fiber and a portion of the shives, and consists of flax shives, flax pods, broken and immature flax seeds and the cortical tissue of the stem.

LINSEED MEAL is the ground product obtained after extraction of part of the oil from ground flaxseed screened and cleaned of weed seeds and other foreign materials by the most improved commercial processes.

OIL MEAL is the ground product obtained after the extraction of part of the oil by crushing, cooking and hydraulic pressure, or by crushing, heating and the use of solvents from seeds which have been screened and cleaned of weeds seeds and other foreign materials by the most improved commercial processes. When used alone the term "oil meal" shall be understood to designate the product obtained from screened and cleaned flaxseed. When used to cover any other product the name of the seed from which it is obtained shall be prefixed to the word "oil meal."

OLD PROCESS OIL MEAL is the ground product obtained after extraction of part of the oil by crushing, cooking and hydraulic pressure from seeds screened and cleaned of weed seeds and other foreign materials by the most improved commercial processes. When used alone the term "old process oil meal" shall be understood to designate the product obtained from partially extracted, screened and cleaned flaxseed. When used to cover any other product the name of the seed from which it is obtained shall be prefixed to "old process oil meal."

NEW PROCESS OIL MEAL is the ground product obtained after extraction of part of the oil by crushing, heating and the use of solvents from seeds screened and cleaned of weed seeds and other foreign materials by the most improved commercial processes. When used alone the term "new process oil meal" shall be understood to designate the product obtained from partially extracted, screened and cleaned flaxseed. When used to cover any other product the name of the seed from which it is obtained shall be prefixed to "new process oil meal."

UNSCREENED FLAXSEED OIL FEED is the ground product obtained after extraction of part of the oil from unscreened flaxseed

by crushing, cooking and hydraulic pressure, or by crushing, heating and the use of solvents. When sold without grinding the unground product shall be designated as "unscreened flaxseed oil feed cake."

INGREDIENTS OF UNSCREENED FLAXSEED OIL FEED—Ground cake from partially extracted flaxseed and foreign seeds (wheat, wild buckwheat, pigeon grass, wild mustard, etc.)

SCREENINGS OIL FEED is the ground product obtained after extracting part of the oil by crushing, cooking and hydraulic pressure, or by crushing, heating and the use of solvents from the smaller imperfect grains, weed seeds and other foreign materials having feeding value separated in cleaning the grain. The name of the grain from which the screenings are separated shall be prefixed to "screenings oil feed."

OAT GROATS are the kennels of the oat berry.

OAT HULLS are the outer chaffy coverings of the oat grain.

OAT SHORTS are the covering of the oat grain lying immediately inside the hull, being a fuzzy material carrying with it considerable portions of the fine floury part of the groat obtained in the milling of rolled oats.

CLIPPED OAT BY-PRODUCT is the resultant by-product obtained in the manufacture of clipped oats. It may contain light, chaffy material broken from the ends of the hulls, empty hulls, light, immature oats and dust. It must not contain an excessive amount of oat hulls.

RICE BRAN is the cuticle beneath the hull.

RICE HULLS are the outer chaffy coverings of the rice grain.

RICE POLISH is the finely powdered material obtained in polishing the kernel.

WHEAT BRAN is the coarse outer coatings of the wheat berry obtained in the usual commercial milling process from wheat that has been cleaned and scoured.

SHORTS OR STANDARD MIDDLINGS are the fine particles of the outer and inner bran separated from bran and white middlings.

WHEAT WHITE MIDDLINGS OR WHITE MIDDLINGS are that part of the offal of wheat intermediate between shorts or standard middlings and red dog.

SHIPSTUFF OR WHEAT MIXED FEED is a mixture of the products other than the flour obtained from the milling of the wheat berry.

RED DOG is a low grade wheat flour containing the finer particles of bran.

WHEAT BRAN WITH MILL RUN SCREENINGS is pure wheat bran plus the screenings which were separated from the wheat used in preparing said bran.

WHEAT BRAN SCREENINGS NOT EXCEEDING MILL RUN is either wheat bran with the whole mill run of screenings of wheat bran with a portion of the mill run of screenings, provided that such portion is not an inferior portion thereof.

TENTATIVE DEFINITIONS.

YEAST OR VINEGAR DRIED GRAINS are the properly dried residue from the mixture of cereals, malt and malt sprouts (sometimes cottonseed meal) obtained in the manufacture of yeast or vinegar, and consist of corn or corn and rye from which most of the

starch has been extracted, together with malt added during the manufacturing process to change the starch to sugars, and malt sprouts (sometimes cottonsed meal) added during the manufacturing process to aid in filtering the residue from the wort and serve as a source of food supply for the yeast.

OIL CAKE is the residual cake obtained after extraction of part of the oil by crushing, cooking and hydraulic pressure from seeds screened and cleaned of weed seeds and other foreign materials by the most improved commercial processes. When used alone the term "oil cake" shall be understood to designate the product obtained from partially extracted, screened and cleaned flaxseed. When used to cover any other product, the name of the seed from which it is obtained shall be prefixed to "oil cake."

GROUND OIL CAKE is the product obtained by grinding oil cake. When used alone, the term "ground oil cake" shall be understood to designate the product obtained from partially extracted, screened and cleaned flaxseed. When used to cover any other product the name of the seed from which it is obtained shall be prefixed to "ground oil cake."

GROUND FLAXSEED OR FLAXSEED MEAL is the product obtained by grinding flaxseed which has been screened and cleaned of weed seeds and other foreign material by the most improved commercial processes.

PALM KERNEL OIL MEAL is the ground residue from the extraction of part of the oil by pressure or solvents from the kernel of the fruit of the elaeis guineensis or Elaeis malanococoa.

IVORY NUT MEAL is ground ivory nuts.

PEANUT OIL CAKE is the residue after the extraction of part of the oil by pressure or solvents from peanut kernels.

PEANUT OIL MEAL is the ground residue after the extraction of part of the oil from peanut kernels.

UNHULLED PEANUT OIL FEED is the ground residue obtained after extraction of part of the oil from whole peanuts, and the ingredients shall be designated as "PEANUT MEAL AND HULLS."

The three new by-products referred to were studied by this Association and definitions given for the same. Recently it has come to our attention, and it has also been referred to this Association, of the presence of tin in certain grades of refuse middlings from the manufacture of tin plate. This difficulty is now being overcome by the use of magnets which takes out all particles of tin which might be present in the product. In order to be absolutely sure, however, that no harm can come from the feeding of this material, the Live-stock Sanitary Board of our Department is conducting a feeding experiment with this feed. It would be well, at this time, to call your attention to the fact that one brand of so called refuse middlings was being sold which contained a large amount of ground peanut hulls, but as the law prohibits the sale of peanut hulls in any feed in the State, we have refused to permit this product to be sold, and therefore, if any of you gentlemen have any doubt as to the character of refuse middlings, it would be well to send samples to the Chief Chemist of the Department who will tell you whether or not any peanut hulls are found in it.

Owing to the damage caused to the oat crop during the year, much of this grain became damaged and in order that it could be sold in

the trade, bleachings of the oats has been resorted to. From what we can learn no harm can come from the feeding of bleached oats although, of course, the oats are not of the same character as those which have not been damaged and it is claimed by some that the germination power of the oat is destroyed by bleaching.

I wish to call your attention also to the fact that some of the cottonseed meals being offered for sale this year, are not of as high a protein content as has usually been the case. This condition has been caused by the presence of more hulls in the meal than usual. It seems that because of the war abroad, there has been a big demand for lint which formerly brought about 2 cents per pound which now is being sold at about 7 cents per pound. This means that the manufacturers are cleaning all the lint they possibly can off the hulls which makes it difficult to separate as much of the hulls from the meal as could be done before the lint was removed. Where such meals are running low in protein, and contain excessive amount of cottonsed hulls, the Department has insisted that they be sold as a cotton seed feed. It would be well, when purchasing this product for you to have samples analyzed in our Laboratory, if you have any doubt that the guarantees will not be met.

A large proportion of the feed found on our markets consists of molasses feeds and chicken feeds. A claim is made by a reliable authority that at least 2 million tons of molasses feeds were sold in the United States last year. These feeds are of a better grade than have ever been sold before in the State and are improving from year to year. As is well known, they are made up of various by-products to which molasses has been added. In many cases the main ingredient used is grain screenings meal. This material is finely ground and pulverized until it resembles flour in its fineness and the pulverizing process destroys any whole weed seeds which might be present.

The chicken feeds, judging from the samples examined in our Laboratory, are of a better grade than ever before, as they do not appear to contain such quantities of weed seeds which the law prohibits. Many of these feeds are composed of the second and third grade cereal grains which are not used for making flour. The fact that the quality of the feeds being sold has improved, has made it unnecessary to bring but a few prosecutions during the last year. This situation is gratifying to us. From this information it will be apparent that this line of work which the Department is doing is of greater importance than usually can be realized or learned. It requires constant care on the part of our laboratory force to watch out for adulterants and violations and only scientific men carefully trained can be trusted with this work.

This brings me to a subject of vital importance to all those interested in this work, that is the needs of our Department for the proper enforcement of the Feeding Stuffs Law.

At the last session of the Legislature our appropriation for this work was reduced one-third of what we had been receiving and this reduction did not permit us to make any advancement forward in the line of special investigations and has made it impossible for us to investigate all cases properly where complaints are made. We are also called upon to show an exhibit of feeding stuffs to the various fairs, from time to time, and we have not been able to do this in all

cases. It is highly desirable, therefore, that the appropriation for this work for the next fiscal period should be put back to its original amount. I call your attention to this matter in order that you may know of the situation and also as you may have an opportunity to help us out in this respect. We haven't examined quite as many samples of feeding stuffs last year as we did the previous year for the reason that the work was interrupted by moving the laboratories. The Board of Public Grounds and Buildings have fitted up a building in the Capitol Park Extension zone for the use of the laboratories of the Department and have moved the equipment from the Capitol to this building which makes it possible for all the chemical work of the Department to be done in a thorough and economical manner.

During the year our Special Agents collected 1,264 official samples of feeding stuffs which were submitted to the Chief Chemist for analysis. All of these samples were examined microscopically and analyzed for protein, fat and fiber and reports made to the manufacturers and the dealers from whom they were secured. In addition to this there were 225 special samples of feeding stuffs sent in for analysis by residents of the State.

The following is a list of the counties visited and the number of samples of feeds collected in each which I will not read at this time but which will be included in the published report. There were a number of towns visited in which no sample were secured as they represented brands, samples of which had been taken in other towns, however, we feel that the State was well covered during the year of inspection.

Name of County	No. of Samples
Adams,	4
Allegheny,	76
Armstrong,	13
Beaver,	35
Bedford,	18
Berks,	36
Blair,	36
Bradford,	24
Butler,	36
Cambria,	40
Cameron,	8
Centre,	16
Chester,	24
Clearfield,	26
Clinton,	13
Crawford,	26
Cumberland,	12
Dauphin,	24
Elk,	23
Erie,	34
Fayette,	26
Forest,	3
Huntingdon,	10
Indiana,	26
Jefferson,	36

Juniata,	8
Lackawanna,	12
Lancaster,	67
Lawrence,	13
Lebanon,	35
Luzerne,	48
Lycoming,	34
McKean,	28
Mercer,	16
Mifflin,	28
Montour,	8
Northumberland,	30
Perry,	2
Philadelphia,	10
Potter,	10
Somerset,	31
Susquehanna,	12
Tioga,	50
Union,	18
Venango,	21
Washington,	36
Westmoreland,	68
York,	44
Total,	1,264

I cannot complete this report without referring to the former Secretary of Agriculture, Hon. N. B. Critchfield, whose twelve years of service in the Department has been of much benefit and help to us all. Mr. Critchfield always took a special interest in the feeding stuffs work, going into all details of the matter and never left a hand unturned to do all that was possible for the betterment of the feed conditions in the State. In his resignation we lose his valuable advice and help in this line of work. However, his successor, Hon. Charles E. Patton our present Secretary, has also shown a great interest in this line of work and the former policies of the Department will be continued.

The CHAIRMAN: If there are no objections, this report will be accepted and published with the proceedings of the meeting. Is there any discussion? I might say that I hope that the garbage tankage is to be a food for stock, otherwise we will have it as a popular form of breakfast food.

MR. HUTCHISON: The young fellow who is pushing that enterprise is a man with a sharp face, don't look like there was much in him, but he is as sharp as a tack and is trying to put it on the market. In regard to the Seed Bulletin, we have some copies there; and if you have not all received them, we will be glad to give them to you and by next year we hope to have a Paint Bulletin. A paper on paint was read here but it did not bring one bit of discussion; I believe you chaps have been getting mighty good paint or you would have got into that scrap. That is a thing that has been defrauding the people of this Commonwealth; it has made millionaires out of some people.

We met some of them in Philadelphia, but it has put stuff on your houses that has scaled off and is worthless, but we hope by another year, if everything goes right, to be able to give you some information on that line.

The CHAIRMAN: The next report will be on Soils and Crops, by Prof. Franklin Menges.

PROF. MENGES: Mr Chairman, Ladies and Gentlemen: I will not refer to any criticsms along soil lines, but I am going to confine my report entirely to crops and crop rotations and if you have any criticisms to offer, I wish you would offer them, because I am going to say some things that might not seem practical to you people and if they are not practical, I want to know it, in fact I want to know it especially because what I am going to read to you has been tried for a short time and really so short that we have not been able to demonstrate whether it is going to be a proposition that it will be possible to carry out along definite agricultural lines.

Prof. Menges then submitted the following report:

REPORT ON SOILS AND CROPS

By PROF. FRANKLIN MENGES

In last year's report we discussed the general methods of crop rotation follows throughout the State, and, in closing stated that in all sections of the State, crop rotation should be so arranged that advantage may be taken of cool weather cereal and leguminous crops in the higher and northern sections, and dry weather cereals and leguminous crops for the dry soils, and of the warm and hot weather cereals and leguminous crops for the warmer and hot areas of the State, so as to make crop rotations do what all rotations should do, namely, produce the largest amount of human nutrition and at the same time improve the soil permanently. A beginning has been made by the Bureau of Practical Agricultural Educational Work of the Department of Agriculture of the State along this line by introducing into the regular four year's rotation with every soil exhausting crop, a soil improving crop. This work was started three years ago in the northern part of York county on the mesozoic sandstone and shale soils on a farm which had been so reduced in fertility that the owner said to the writer that he could not get a renter for the place who would stay on it longer than a year. An examination of the soil revealed the fact that the organic matter had been so reduced that virtually all fertility for the growing crop had to be obtained from mineral sources because the humus still in the soil had changed into the inert condition and the quantity was so small that if it had been active humus it would have furnished but little fertility, and the soil was chemically inactive except for the little activity maintained by the commercial fertilizer applied annually, which is an activity not conducive to large crop yields, especially in sandy soils, and therefore

the first and great thing to do was to devise a method for making humus on a soil which had to yield crops and where there was no manure, by raising soil improving crops with or following the soil exhausting crops.

This operation was started with the corn crop. A fertilizer composed of 1,200 pounds basic slag, 600 pounds 7% animal tankage and 200 pounds muriate of potash in the ton, was applied with the corn in the row at the rate of 200 pounds per acre, and before the last cultivation, Whippoorwill cowpeas, which had been inoculated with inoculating material from the Department of Agriculture at Washington, were sown in the corn at the rate of one bushel per acre and covering with the cultivator. The middle of September, when the corn had ripened, which, considering the condition of the soil, was a splendid crop, was cut and when husked yielded 90 baskets of ears per acre. The cowpea vines were in many instances more than two feet long with an average length of 18 inches, and covered the ground completely. As previously indicated, the soil was sandy and the cowpeas and corn stubble were cut up and mixed with the soil with a disk harrow by harrowing the ground three or four times. After the land had been prepared in this way, it was seeded with wheat, and with the wheat 200 pounds per acre of the same mixture of fertilizer as had been applied with the corn. The following spring, after the middle of April, inoculated hulled white blossom sweet clover seed was sown with the wheat at the rate of 3-4 quarts per acre and covered with a weeder. The seed came up and grew sufficiently tall that some tops were cut off when the wheat was harvested. The sweet clover was allowed to grow until the middle of August. When it had reached a height of 15 to 20 inches, it was plowed down and the land seeded with wheat again, and with the wheat the following spring, red and alsike clovers were sown, and in this way a soil improving crop was raised with every soil exhausting crop, or a soil exhausting crop followed with a soil improved crop in the old four years' rotation. As previously stated, a crop rotation should be so arranged that it will produce the largest amount of human food that can be produced in the individual soils and under prevailing climatic conditions and under the management of each individual farmer, whether some phase of the livestock or semi-livestock and grain farming operation be followed or grain and hay forming or seed production which will, in the near future become a necessity in this State, or any other phase of agriculture or horticulture, and, in addition, improve the fertility of the soil. These are not easy things to do but can be done.

The livestock industry should, in a much larger way, be the prevailing agricultural industry of the State, and in order to make it more attractive financially, crops must be produced on the farm to feed the animals to get away from paying profits coming and going, and to do this, rotations established by means of which the largest amount of a high feeding value roughage and grain foods can be produced. A rotation for the southern part of the State which will furnish a large amount of a high feeding value roughage and at the same time improve the soil, can be arranged by seeding winter rye in the corn stubble in the fall of the year, and in the spring, as soon as the ground is sufficiently dry to run a weeder or a spike-tooth harrow over it, so

with the rye equal quantities of red and mammoth clovers, the rye cut for hay or silage when it is heading, which, in the southern part of the State, will be early in May; allow the clover to grow until it is well headed, which will be sometime in July or August, cut for hay and allow the second crop to remain on the field. In this way two crops of high feeding value hay can be produced and one soil improving crop, all in one season. The following spring this clover sod is plowed down and the land prepared and planted with corn and the corn field of the previous year which had been sown with rye, used for the hay field, and in this way a farm can be divided into two fields, one for hay and the other for corn, and with the right use of the manure, the soil improved continuously.

An effort has been made to start this kind of work in a few sections of the State because of soil and climatic conditions being especially favorable; but a rotation which is more attractive to me than the above outline is now being practiced on a 300 acre farm by Martin Cope's son, Lancaster county. These people raise sweet corn which they dry and sell as their money crop. The husks and cobs are cut up and fed to cattle, and the corn stalks which, as all corn stalks do when the ears are plucked at the time they are in the best condition for drying, accumulate sugar in a few weeks until they contain as much as 12 to 14 per cent., when they are cut and either siloed or tied up in bundles and carefully dried and fed to cattle, furnishing approximately as rich a carbo-hydrate food as an ordinary corn crop. At the last cultivation of this corn, red and alsike clovers, alfalfa and timothy are sown with the corn, and the following year anywhere from 2 to 4 crops of hay are cut off this land; the first crop mixed hay made up of timothy, red and alsike clovers while the second and third crops are largely of alfalfa. These rotations furnish a large amount of roughage and corn but not a sufficient amount of high feeding value protein and grains, and therefore either part of the sod field must be planted in the southern section of the State with soy beans and in the central and northern part with Canada field peas, or part of the field seeded for hay must be used for raising these crops.

It may be well to state that one bushel of soy beans ground with two bushels of corn will make a splendid grain ration for dairy cows, but it is likely that with well nigh all farmers throughout the larger part of the State, the longer rotations such as the three years for the central and northern and higher areas made up of corn followed with Canada field peas and oats, and the Canada field peas and oats with clovers and, wherever possible, alfalfa, and in the southeastern sections, a rotation of corn, soy beans and, in some sections, cow peas and alfalfa, will prevail for a long time.

As previously stated, the raising of clean, pure seed of good vitality has become a question of supreme importance in the State and through the introduction of shorter rotation, this demand will be much enlarged, which, with a large acreage of sandy, loamy, warm late fall and early spring farming soils splendidly adapted for raising fall or early summer ripening crops, such as crimson clover, followed with a dry hot weather early fall ripening crop such as the cowpea and sweet clover, and in the more loamy soils, with soy beans for seed, this demand can be supplied and the land continually improved.

Rotations of this character have been outlined and started in a small way on the sandy and shaly soils derived from the Clinton strata in Juniata county.

The CHAIRMAN: If there are no objections, this report will be received and published with the proceedings of the meeting.

MR. KEIPER: I would like to ask the gentleman is there any information or is there anybody here that has any information on spring wheat? I have exhausted our State College and the Department at Washington and cannot get any information. I am about to get some spring wheat from Montana and Dakota and try it. Both the State College and the Agricultural Department at Washington would like to have the information I get.

PROF. MENGES: Where are you located?

MR. KIEFER: Here in Dauphin county.

PROF. MENGES: You are too far south for spring wheat unless you can sow it in March. If you have land that you can farm and sow the wheat up until the middle of March, it may do all right. You know wheat is a cool weather plant and it does best if it can develop in cool weather and then ripen in pretty dry, hot weather. That is what makes Kansas wheat. Now in the northern sections, you know they have climatic conditions that suits exactly; they can sow their wheat early and it will ripen when they have little rains during July and August, and that makes their splendid, hard wheat, a condition that does not prevail here, normally.

A Member: You will succeed for one year, then I am afraid that you will get a very inferior quality.

PROF. MENGES: Yes, that has been the experience; if you were located in Bradford, Tioga, or even in Susquehanna counties it would be different.

A Member: Of Lackawanna county?

PROF. MENGES: Your conditions are good for some other things. If you were located up there, I think you might try it with some advantage, but I am pretty sure you will make a failure of it down here, for the reasons I have stated.

MR. SEAMANS: I will say for the information of the gentleman that we procured seed from Wisconsin, spring wheat last spring on my farm, and sewed four acres and we had a fairly good crop, we thought, we harvested 100 bushels from four acres, and about one acre of it went down, it was a little too wet. That has been our first experience in sowing spring wheat for some 20 or 25 years, but we have been well satisfied with the crop.

MR. FENSTERMACHER: I tried out a good substitute for spring wheat, and that is Kansas turkey red, a winter wheat almost the same quality as the spring wheat. I had the local miller test it and the chemist test it and they pronounced it about as good. But a peculiar thing about it, they would not pay me the price that the spring wheat would cost delivered at their mill.

MR. KEIPER: Did you plant it in the spring?

MR. FENSTERMACHER: No; the yield will be best, the straw is short and the grain excellent; it makes the finest chicken feed in the world. But there was the condition, the miller would not give me the price he would have to pay for the same grade of wheat bought in the west; it was unprofitable because it did not yield enough money.

PROF. MENGES: The best crop or the best paying crop that can be procured in those northern sections is the Canada field pea and oats. There is no question, I think, about that any longer, and it would pay our friends to follow that three years rotation, corn, Canada field peas and oats and grass and wherever possible, alfalfa. I do not say that alfalfa will do well in all sections of the State, because it will not, but wherever it is possible, I think that rotation would pay our people splendidly. Now there are some sections where the corn does not do well, and there I would change the rotation a little again.

MR. HUTCHISON: Speaking of alfalfa, I did not refer to it in this report, but I have been encouraging the farmers in Huntingdon county to grow alfalfa, and in our township, the best limestone township, the best limestone land in Pennsylvania, there's over a hundred acres of alfalfa doing well. A few years ago, you could not persuade a farmer at all to sow in it. Those of you who get The Stockman and Farmer saw a large field of 40 acres of alfalfa last year accredited as coming from Blair county near Tyrone, but that was grown out in old Huntingdon county. Dr. Beck has a whole lot of good things up there, but they want to take credit for this alfalfa in Blair county; it's over the river in our township and that man is raising it and doing good on that farm, that is growing that alfalfa. Now here is something there may be a dispute on, but that man last year produced on that farm $6,000 worth of products sold off of that farm in that township. He is about 2 miles from Tyrone. I do not want to go into the detail. He keeps a dairy, he retails the milk, keeps hogs and he has his alfalfa to feed his cows and his name is John Campbell; he is prosperous and I had him at an institute Saturday. That is just one township where the man is farming and the backbone of his feed is alfalfa and he is not paying $25. and $30. a ton to the dealer for it, he is raising it there on that limestone land. A few years ago every one said, "What is the use of your trying alfalfa here? You cannot grow it." They are growing it there and Mr. Peck and Mr. Grasier and all those dairymen are sowing alfalfa and an abundance of it. Mr. Leidy has a number of acres of it, but if we people up at the foothills of the mountain can do it up there, why can't you raise alfalfa all over this state and stop this enormous feed bill and the money you are paying out to the western people for growing alfalfa way beyond the Mississippi and shipping it here? Get to thinking about it, you institute men, you directors. Go out to your work and talk alfalfa to these people, and if they miss one year, don't get discouraged. Mr. Campbell missed it the first year but stuck to it. Get a little stick-to-it-iveness; that's a pretty good word, though it is not a college word, Dr. Sparks, but that will win in this farming proposition if you put the stuff into it.

PROF. MENGES: I am very glad that Mr. Hutchison referred to this matter. This work has been started all along the line, so far as I have been able to do anything. Senator Fox, whom a great many of you know, has a little farm in Cumberland county, and last summer a year ago we started with alfalfa there, in preparing for alfalfa, we sowed the land the previous fall with rye. We plowed down the rye and the following May sowed the land with cow peas, inoculated the seed, plowed down the cow peas in August and sowed the land with alfalfa, and last summer Senator Fox had his first crop of alfalta; he is down here in the Kunkle building, go and ask him about it. He harvested five tons of alfalfa hay from an acre the first season, and his land is not any better than thousands of acres of the same formation, which is the Hudson River shale, in this section of the State.

MR. KEIPER: I think it would be interesting for all the delegates to know something about Soudan grass. All the papers made a great deal of clamor in the last year and I sent to Texas and got enough seed for five acres. It was pretty late when we got it planted, on account of the wet season and other crops being in the way, and they said it would grow, made all kinds of claims for it growing on wet land, dry land and any other kind of land, so I put it in a damp field, planted it about the first day of June, fifteen pounds to the acre, broadcast and harrowed it in. I had two splendid crops of Soudon hay and the cattle don't seem to be able to get enough of it. I think with that little experiment, if I go a little further and if the rest of you try it out here in the State, that we will have a crop that will very largely take the place of alfalfa hay, give us more feed for roughage and, the claim is made, will enrich our soil. They claim that that is one of it's best points, the soil enrichment coming from the large roots and the large number of stalks, I counted 47 stalks from one grain; it is a great soil enricher.

The CHAIRMAN: Is there any more discussion on this report?

MR. J. ALDUS HERR: If the Chair so desires, I have the report of the Committee on Resolutions.

The CHAIRMAN: If there is no objection, we will receive that report at this time.

Mr. Herr then presented the report of the Committee, as follows:

REPORT OF RESOLUTIONS COMMITTEE.

We, your Committee on Resolutions would offer the folowing as our report:

Resolved, That we deeply regret that an amount of important work in the Department of Agriculture and State College remains incomplete by reason of seeming necessity for a reduction in the appropriations to these organizations by the last Legislature, and sincerely trust that the forthcoming Legislature will make full appropriations to these agencies.

Whereas, We, the members of the State Board of Agriculture of Pennsylvania, feel that the work of our State Police has been of incalculable benefit and help to the people of our State, especially

in the rural districts where, of necessity, our homes are exposed to trespass and other lawless acts. They have given protection and assistance in time of need; and, whereas, the great work they have done in preserving the natural resources of our State, such as the forest and game, and in enforcing the laws regarding the protection of our workers, our industries and commercial interests; and, whereas, their skill and service in times of misfortune, floods, fires and pestilence, in the control of which they have co-operated with the local and State officials, has been of untold value; be it

Resolved, That we urge the continuance of the State Police in their present form and that their membership may be increased as the needs of he State require.

Resolved, That we, the members of the State Board of Agriculture, hereby express our appreciation of the long and most excellent service of our late Secretary of Agriculture, Hon. N. B. Critchfield; and, further resolve that we recognize the untiring efforts and work of our former Deputy Secretary of Agriculture and Director of Farmers' Institutes, Hon. A. L. Martin, under whose management the Institutes of the State have reached a high standard; and, be it further

Resolved, That recognizing the great work that has been accomplished through the Farmers' Institutes and corps of Farm Advisers, that we heartily endorse these features of our educational work in connection with the Department of Agriculture, and would recommend that our Legislative Committee, at the forthcoming session of the Legislature, ask and work for a larger appropriation to carry on the work.

Resolved, That we, the members of the State Board of Agriculture, welcome as our chief, the newly appointed Secretary of Agriculture, the Hon. Charles E. Patton, and hereby assure him of our hearty co-operation in the great work to which he has been called.

Whereas, Believing that our game laws should be amended as follows: First, amending the game laws to prohibit the killing of Quail; second, Deer hunting season should be from November first to fifteenth; third, there should be a closed season for Ruffled Grouse embracing three years.

Resolved, Therefore, that our Legislative Committe bring these amendments, as above noted, to the attention of the forthcoming Legislature, and use all possible means to have them enacted.

Resolved further, That we ask the County Agricultural Societies and Allied Associations to pass similar resolutions.

(Signed)

J. ALDUS HERR, Chairman.
JOHN A. WOODWARD.
B. F. KILLAM,
GEO. G. HUTCHISON,
WM. C. BLACK,
Committee.

The CHAIRMAN: Gentlemen, what is your pleasure in regard to this report?

On motion of Mr. Brong, the report of the Resolutions Committee was adopted.

The CHAIRMAN: Now we were to have had at this time an address by Hon. A. F. Lever, on Agriculture, and I am very sorry to inform you that, on account of sickness in the family he is unable to be with us today. Most all of our discussions or a lot of our discussions today and yesterday have brought up the question of better marketing facilities, and I am very glad to announce that Mr. Dorsett has kindly consented to take this time and give us a talk on marketing. (Applause).

MARKETING

By E. B. DORSETT

Mr. Chairman and Members of the Board and Fellow Workers: I deem it an honor and a privilege to address this intelligent body; but naturally I shrink from taking the place of a man of such prominence as Congressman Lever. As has been stated by your Chairman, in all these meetings, thus far, the one problem that seems to be bothering you is, that of better market facilities. I am satisfied that there is no problem confronting the farmer today that is of such vital importance to him as adequate marketing facilities. I would not in the least discourage the increased production that we hear about, but I am firmly convinced that the farmer is not so much worried today about producing the crop as he is about marketing it after it has been produced, and I believe that the greatest problem that confronts you today is, "How Can I Get That Product to Market At The Least Expense and Get The Most Out of It?" I know that we have many remedies, many solutions of this great problem, and I know that there are many theories and there is much criticism, but I want to say to you, fellow farmers and members of the Board, that it is much easier to criticise than it is to bring forth a definite plan of action. We have what might be called two forms of criticism, constructive and destructive, and we have plenty of men who are long on destructive and short on constructive criticism. We have plenty of men who can tear down, but we do not have men enough who can build up. It takes more brains to build up than it does to tear down, and I think that Lincoln hit the nail squarely on the head when he said that before one tears down the house which one has built, he must first build one for himself; and so in this great problem of marketing, it requires the earnest co-operation of all agencies interested in the uplift of agriculture.

I want to call your attention right here to one fact that has cropped out here at this meeting and has found its way into the columns of the newspapers about the overlapping of interests. It is not for me here to say where it came from or who is back of it, but I want to say this to you, that we cannot afford, as men interested in agriculture, to allow any outside interest to keep us apart. (Applause) Some years ago, down in the south, when that great Civil War was going on, a great general met one of the colored gentlemen one day and he said, "Sambo, why is it that you are not at the front fighting? Do you not know that this war is for you?" Sambo looked at him a moment, then he said, "Massa, when two dogs fight over a bone, the bone don't fight." (Laughter) Now that is the situation in Pennsylvania today; if we are going to do anything along the line of

marketing, we must have thorough co-operation. But I haven't time this afternoon to cover this field as I would like, and I did not know, until noon, that I was to say anything on this subject, and fortunately for you and unfortunately for me, I have not had time to prepare a manuscript or even notes; but I want to say to you that there are three great factors that we need as farmers and as men interested in agriculture. The first is organization, the second is education and the third is co-operation.

ORGANIZATION

With these three great factors at work, I want to say to you that we can cover the field thoroughly. Now, in just touching on the first, that of organization, I want to say to you that no great achievement has ever been accomplished save through organization. You can see that here with this Board of Agriculture. Follow its history from its birth down to this day and note its achievements. It is a striking example of what you can do by thorough organization. Then, again, I would call your attention to the fact that in these organizations they ought not to cover too wide a territory; they should be local, to start with. We are reading much in these days, and hearing more, about community centers and community interests.

Well, that is only another form of organization. Now that organization may take whatever form you are pleased to follow. It may be the grange, it may be the farmers' club or the farmers' union, or it may be just a little handful of farmers; but remember that the first thing you must do is to *organize.* That is the thought that I want to leave with you and I want to pound it in so hard that you will not forget it. Why, some years ago when P. T. Barnum was at his desk, as the people came out of that tent one afternoon at the close of one of his afternoon performances, they came along the side of a smaller tent and there they saw and heard one of those barkers, as they were called and he was proclaiming, in a loud tone of voice, that for a dime, ten cents, a tenth part of a dollar, they could go inside and see what no man, woman or child had ever seen before. They quickly parted with their dimes and went in and the tent was finally filled to overflowing and then they commenced to come out and they called that man an imposter. Why, they said "There is nothing in that tent." He said, "Wait a minute." He went inside and hauled back a curtain and there, sitting on a plank, were six farmers and they had hold of a rope and they were all pulling together, the other end being fastened to the center pole of the tent. He said, "There, ladies and gentlemen, is something that no man, woman or child ever saw before, six farmers pulling together." (Applause and laughter). Now that is the keynote of marketing, pulling together. I would like to see this State Board pull together as a unit in the great work of uplifting agriculture.

EDUCATION

Now the second point I want to make is that of education, and I shall not refer to the kind that you would ordinarily expect to get in college, but rather that which you would get from the University of hard-knocks. That is the kind of education that most of us have and that is the kind of education that sticks, and I want to say to you that the very best education a man, woman or child can get is that

which teaches him or her how to work. Why, someone has said, "God help the rich, the poor can work;" and I believe that this is the real salvation of this country today that so many of us know how to work, and the best thing that could happen to agriculture today would be to have more young men and more young women on the farm who know how to work.

Now the education that I refer to today is that which acquaints the farmer with the needs of the market. I discovered yesterday, by listening to the remarks that were made here, that even though some of you have been engaged in a certain line of agriculture for a number of months, that you have not yet learned the needs of the market and that the great question, one which requires considerable education, and you know the allegation is often made, and I resent it with all my heart and all my soul, the allegation is often made that the farmer is not a business man. I want to say to you that you may go where you will over Pennsylvania or throughout the length and breadth of this country, and you will find that the best and the brainest men are men from the farm. Go into the great banking institutions of Philadelphia or New York and you will find that 90% of them were men from the farm. They are business men, but unfortunately many of them do not have time to study the science of selling their products, and that is where a great many of them fail, they do not understand how to get their product to the market in the best form and at the least expense, and I believe that the Department of Agriculture could do no greater service to you farmers and to agriculture in general today than to give the farmer some assistance along the line of grading, packing and salting.

Just let me relate one or two experiences I have had which cover this point: I think it was two years ago, nearly two years ago, that I was in one of the western counties of Pennsylvania where they ship a great deal of hay, and those farmers thought they were not getting enough for that hay. Well, I said, "Do you want to ship it direct to the market?" And they said, "Yes." I said, "All right, I'll tell you where to ship it;" and then I said to them: "Now you have several grades of hay, and not many of you have had any experience in the grading of that hay, but so far as you can, order two or three cars, and then when you farmers take that hay to the market or to the station, sort it as nearly as your knowledge will permit, putting only one grade in a car;" and those farmers followed out the instructions given them, and they told me afterward that they received $7. more a ton for that hay than they could have gotten at home. Just last week, at the close of the Institute in Mercer county, a young man came to me at the close of the Institute and said, "Do you remember telling me about shipping some hay?" I said, "Yes, sir." "Well," he said, "I saved $7. on a single car." Now that is the kind of marketing that touches the farmers' heart. Why, do you know someone has said that "he who makes two blades of grass where but one grew before is a benefactor to mankind." I want to say to you that he who can bring two smiles where none grew before is a greater benefactor, and there is nothing that will make a farmer smile more widely than to give him a good price for what he produces, and he is not so much concerned today about the production of that extra blade of grass as he is as to who will get it after it is produced. That is the big problem in this business.

Now another illustration to show you what I mean; some of you are engaged in the growing of potatoes; I know there are some here from counties that produce many thousand of bushels, and the one thing that has kept you out of the best markets has been the fact that the potatoes often have not been thoroughly graded. The potatoes as they usually come from the ground ought to be graded into three grades, and yet the common practice is, with many farmers, to simply sort out the little ones as they are called, and then put them all in one grade; yet I know of instances over in New York City, where they are paying 10 and 15 cents more a bushel for potatoes of a certain grade than they are paying where they are shipped practically as they come from the ground.

The question of fruit marketing was touched upon here yesterday. Why, farmers, do you know that it costs 55 cents a bushel to get the apples of the West to our market? Now is it possible that you let some fellow way out on the western coast pay that additional charge and compete with you? You know and I know that you can grow the finest apples in the world right here in Pennsylvania, and what is the difference? Why, just let me call your attention to this; when a man orders a box or 50 boxes or 100 boxes of Spitzenburg apples from the West, he knows that every box will be like the other box; he does not buy them by inspection, but he buys by reputation; but you let some one come into the market where many of our apples are sold and instead of taking your word or the word of the dealer they must see them; and that is not all, they must handle them, and many times handle them until they are bruised and unfit for the market, and that is the method that is being employed in too many instances here in Pennsylvania. Now then we need to have, as has been suggested, and here again comes in your organization—I would like to see all the different horticultural societies of Pennsylvania just tied up in one organization, have one trade mark and one stamp, and when they put on a barrel or a box of apples, it means something, just the same as it does when they come from the west. Why, we farmers have as many brands, as the western farmers have, and why can't we use them? And I believe that the time is coming when we will use them.

Another thing—I call your attention to along this line of education is the fact that oftentimes we dont know when and where to ship. That is a serious obstacle, and here again I believe that the Department of Agriculture can be of great assistance to us in this work. We should have on file at the Department at all times information that will enable you farmers to know where and when to ship. Why, you know it is a crime to ship products to one market until it is glutted to that extent that they must take the apples or the potatoes or the tomatoes or whatever it may be, out and dump them into the river or the ocean. That condition ought not to obtain, and if we had adequate marketing facilities and the right kind of information, it would not obtain. There is just as much in knowing where and when to ship as there is in producing the crop. We hear much about supply and demand and undoubtedly that affects market prices, but our marketing has been dump and demand, and I want to stop it. Why, the farmers today are planting and sowing by faith, and they reap in hope and they market by accident; and they have been doing that right along, and now let us see if we cannot adopt a better method, let us see if we cannot, by working together, work out a problem that will give to each man an honest share of what the harvest

yields. I am a firm believer in giving the producer of any commodity an honest price for what he produces. I think if there is anybody that ought to have the profit, it is the man who produces it and not the man who hands it over to somebody else; all toil, if it is honorable, should bring some recompense, and if we need assistance in this work and men to give valuable aid, then they are entitled, then they are entitled to some pay, but we can work out a system whereby we can eliminate a lot of unnecessary so-called middle men.

Now a great deal has been said about the middlemen and I am not here this afternoon to make any cry against them. I want to say that the system is wrong and not the men, and what we need is a different system of marketing, and when we have that, we will not need to worry about the middleman, he will be taken care of all right, and with a system along the line that I have suggested, I am sure that we will help solve this problem.

One other thought comes to me, to show you the need of having this information; I think it was two years ago last August that I was in York county in a community where they raised a great many potatoes, and, as I remarked, it was about the third of August. I was at a little railroad station, I have forgotten the name of it; the farmers were loading potatoes and I went out into the car where they were loading them and asked one of the men what he was getting for his potatoes, and he told me 50 cents a bushel, and I said "Where are you shipping them?" And he said "To Baltimore." Well, I said "You will excuse me, but could you not find a better market than Baltimore at this time of the year?" "Well," he said, "Why?" "Why," I said, "Don't you know that they have potatoes in Baltimore weeks ago and they have plenty of them today? Why not ship these potatoes north where they haven't yet come into the market? When I left my home yesterday morning, potatoes not as good as these were bringing $1.25 a bushel." Now, do you catch the thought? Instead of shipping those potatoes south, they should have shipped them north What would have been the result? Why, the farmers of York county would have gotten more for their products and the consumer at the other end of the line would have paid less, and that is true co-operation. That is the kind of co-operation that you and I ought to be most vitally interested in, that which helps us all, and I would have you remember, farmers, that when you reach out your hand and help your brother, you are bound to help yourself.

CO-OPERATION

The last point that I would touch upon is that of co-operation and, lest some fellow might misunderstand me, I want to give you a definition of co-operation, "Do unto others as you would be done by." Now I think that most of you can tell where that is found. If you cannot, I hope you will hunt it up, but I believe the one thing that has kept farmers from co-operating has been the fact that they have not been willing to follow out that law. When we reach the point where we are willing that the other fellow shall get his share, then we are in a position to do some thorough co-operation.

Now, in conclusion, I would like to urge you farmers, when you go back home, and the members of this Board and the Institute workers, to think over this problem and, having thought over it, if you have any thoughts along the line of helpfulness, I wish you would take the

Secretary at his word yesterday and either see him personally or write him what your thoughts are. This is a work in which we can all help and one in which we are all vitally interested. Let us see if we cannot, during the next two years or during the next year, work out a system of marketing such as no state in the Union has ever seen. I believe we can do it. I believe that with the experience that we have gained along this line, we can make it possible for farmers to not only produce more but get more for what they produce.

I was interested while up in Mercer county to find that the National Government, under the auspices of the Department of Agriculture, was giving the farmers there an interesting lesson in what can be done by way of selling the dairy products. They have leased there a creamery, I believe for 15 years, and the manager of that creamery came before one of our Institutes and gave us a summary of the first year's work, and he showed us that the Government, by running that creamery, was giving the farmer a much better price for the milk from his herds than he had ever received before, and that the creamery cut down the expense and by doing that we are going to solve this great problem. If I had time, but I will not take more of it, I would like totalk to you more about what has been done in co-operating here in Pennsylvania. I could tell you of some things where the farmers—of some instances where the farmers have not only saved money, but they have learned the lesson of putting their products on the market in a form that makes them attractive, and that, I believe, is the solution to the problem of the high cost of living. Now let us go back to our several homes and take up this along with other problems and study them from the standpoint of our interest, and if we do that we will take into consideration all other interests because all interests are dependent upon agriculture and the farmers' success. I thank you for your attention. (Applause).

The CHAIRMAN: I am sure we all feel very grateful to Mr. Dorsett for giving us this splendid address, and on behalf of the Board I wish to thank him. We have with us Secretary Patton and I am sure you would like to hear from the Secretary. He has a few words before we adjourn. (Applause).

SECRETARY PATTON: I think you are nearly all ready to go home. It has been warm and close in here and you have been listening to speeches now for two days. I haven't much to give you; I will try and be in shape next year, when I have had the experience of the office. You must understand I have only been here for three months. A great deal of the work is new to me and I had to get acquainted with it. While I know a good bit about the practical side of farming, there are some parts of it I dont know, and especially the running of the Department of Agriculture. I am the Executive and look after the business end of it. We are supposed to take care of the scientific side of it through our Advisers and our Institute Lecturers and scientific men that we employ in the Department. I have been making some changes in the organization, changing the bureaus around a little and trying to get them into a more business-like shape. I think if you will visit the Department, you will find that we have made some very good changes. Of course, under the new law, the Secretary has more power than he had under the old law. Under the new law all the bureaus come directly under the Secretary; he has absolute control.

I am glad that I have had this opportunity of meeting you all and trying to get acquainted. It is pretty hard to get acquainted with 80 or 90 men here in two days, but I have enjoyed meeting you and I want you to feel at perfect liberty to come to me at any time. If you are in the city, come up to the Department and you will find me there most of the time, as I expect to be on thejob. (Applause).

MR. WEIMER: Mr. Chairman, I believe this morning I was granted leave to prepare, in writing, a resolution which I offered. Our friend Mr. Dorsett likened this body to a bone betwen two fighting dogs; that means then that the bone is no dog's bone. That is a very good condition, a condition we find ourselves in today. But how about the winning dog? What does he do with the bone? Probably takes a few gnaws at it and buries it for future use and forgets all about it, and that is the condition probably we may find ourselves in, and that prompts this resolution:

Whereas, There was created, in 1851, a State Agricultural Society which was later changed in name to the State Board of Agriculture, which, by law, was to act as a body to govern and direct the agriculture work of the State in and through a Department of Agriculture, and

Whereas, There was created by the last Legislature, an act creating a State Agricultural Commission to act as a directing body of the Department of Agriculture, through the Secretary of Agriculture, and

Whereas, The duties of these two bodies are in conflict, and as the Act of 1851 and amendments thereto were not specifically repealed by this Act of 1915, and, therefore, one of these bodies is now unconstitutional or without legal standing;

Be it Resolved, That this question be referred to the Attorney-General and to the Economy and Efficiency Commission, with the request that they report to the Executive Committee of our body as to the legal standing and duties of each body, and such report be published in the 1916 report of the procedings of this State Board of Agriculture.

Gentlemen, I think we ought to know where we stand. I make that as a motion.

Motion seconded.

MR. JOEL A. HERR: I would like to make a statement that the law of 1851 was not the one that created the Department of the State Board of Agriculture; that was done in 1876.

MR. WEIMER: I said "Whereas, there was created in 1851, a State Agricultural Society which was later changed in name to the State Board of Agriculture." Those were the steps of the law. I have looked that up very carefully.

MR. JOEL A. HERR: I think that statement is correct.

MR. WEIMER: It is, because the Act of 1851 makes it possible for every man here today to be here.

MR. HUTCHISON: I have not given this matter very much thought. I wish this had been brought up when we had a full Board meeting. As long as there is no question, the question hasn't arisen

yet to test any of our rights or privileges or what brought us into existence, there is no confliction with our duties, why are we seeking trouble? Why are we seeking to find out about ourselves? What is the demand on us? That is my thought. There was a resolution here this morning when I came in on some similar subject. Now this should have been brought up when each county was represented. The idea of us referring it to the Attorney-General and the Efficiency Commission.

Another thought, I'd have to study over that and find out if that is the proper place for us to take up this trouble? We don't seek any trouble. The Legislature passed the appropriation and paid for us to go on and attend to our duties, and the Secretary of Agriculture, through the Deputy, started us out on the Institute work, and why we should be seeking this, is something I cannot understand. I cannot get it clear in my head why we should raise the question when the public is not and nobody else is, and why we should be bothering about it. Let it come when the time comes, and if we are to be retired, we will accept it like men. But my thought is don't let us be bringing the question up and hashing it up and fussing about it at all. We are doing our work and have had a splendid meeting, and now why do we want to ask the question whether we are or not? I can't understand it. I dont see what it is and don't know what motive there could be that we should raise a question of this kind when not more than two-thirds of the counties here are represented. I move that this be laid on the table.

Motion seconded.

MR. WEIMER: I beg to take exception to Mr. Hutchison's remarks. This resolution was presented when the full board was present and I was given permission to take time to write it out and I want you to think thoroughly about this matter, gentlemen, you may be misled, but you are going to be put out of existence.

MR. HUTCHISON: When that time comes, we'll die.

MR. WEIMER: Let us know before hand. My motion has been seconded, and I would like to have it put to a vote, because I think it means our life or death.

Mr. BOWN: If I understand the motion made this forenoon and to be brought up this afternoon, this is an altogether different motion.

The CHAIRMAN: We cannot compare that for the simple reason it was not presented in writing this morning.

MR. FENSTERMACHER: If I am in order, I would like to call on the Nestor of the Board of Agriculture, Joel A. Herr. I would like to have a short summary of the history of this Board. I call on Mr. Herr. If any man can pour oil on the troubled waters, he can.

MR. JOEL A. HERR: I am not loaded for that kind of game, to undertake now, without warning, to give you a history of the Board of Agriculture. I could not do it and give you a thorough and fair report. But I want to state that the man who offered the bill in the Legislature of 1876 was Dr. John P. Edge, of Downingtown, Chester county, and the bill was passed that year and the Board was organized in 1877, and I did not know that it was the result of any

former organization or that it was changed from any former organization, but the Board started in 1877 with Secretary Edge as the secretary and I don't know that there are any other members of the Board today who were members of the Board at that time.

I came to the Board of Agriculture in 1879, at its Philadelphia meeting. I have attended most of the meetings since. The Board of Agriculture has been the backbone of agriculture of the State of Pennsylvania. The members were sought for any information from their respective counties, and they reported here, they were a strong body of men. The work of agriculture in this State was carried on from that day to the time of the organization of the Department of Agriculture at a very low expense, comparatively. The Department of Agriculture was created under the pretense and under the assertion that the Board of Agriculture, being a large body of people, was very expensive and it ought to be cut down to make it more inexpensive. Well, they created the Department, but the first thing they did, instead of cutting down, was to build up the salaries; they were nearly doubled, and it has been continued from that day to this, more or less. The most important thing, I think, they have done, is to raise the salaries. (Laughter) But without criticising the Department of Agriculture—I have no fault to find with it, I am not here to criticise the Department of Agriculture. If they get more than they earn, perhaps they get it legally and rightfully, but I do want to say that this Board of Agriculture has stood behind all the troubles of the Department of Agriculture. It stood back of them all and it stood behind the State College. It exercised its very best efforts to promote the interests of the State College, and why the State College should have any variance with the Board of Agriculture, I cannot conceive unless they are ashamed that we don't get salaries. (Applause and laughter.) There might be something in that. I am sure that we have given the State a service of charity; we have spent hundreds of dollars every year for which we received nothing but the information that comes through the work of the Board of Agriculture.

Now I don't want to go into an extensive criticism of the Department of Agriculture nor of the Board. I desire that we work together. I think, today, if this Board of Agriculture were abolished, the Department of Agriculture would have a whole lot of trouble on their hands that they don't realize now in conducting the farmers' institutes in such an inexpensive manner as it is at present conducted, where not a member of the Board gets a dollar for his expenses, for his services in carrying on all the institutes throughout the State. I think this Board has been a self-sacrificing Board, have spent time and money. I think I have spent years of service for which I received no compensation but the pleasure and instruction that I got in these meetings. Now, is there anything that you want to ask me? I don't know what you want of me at all.

MR. WEIMER: I would like to ask Mr. Herr, right on the bottom of page 4, you will see the Act of 1851 and 1876. If you will go to the library next door you will get a copy of that law and see that what I tell you is true, and if the Act of 1915, just passed, is construed in one way or another, it means that this body meeting here today is not in existence. I understand that a good many of these

men here have their expenses paid; I understand that a good many of these men represent societies that get $100 from the County Commissioners. If we are not a legal body, we don't want to get that money and I think it is proper to get that information from the Attorney-General.

MR. HUTCHISON: The question is on laying this resolution on the table.

MR. WEIMER: The question is on the resolution.

The CHAIRMAN: The Chair rules that the motion to lay the resolution on the table is in order. We are voting on Mr. Hutchison's motion to lay Mr. Weimer's resolution on the table.

The motion to lay the resolution on the table was then put and adopted.

The CHAIRMAN: Is the Legislative Committee ready to report? Have we any report from the Legislative Committee?

Mr. Lohr then submitted the report of the Legislative Committee as follows:

REPORT OF LEGISLATIVE COMMITTEE

We, the Legislative Committee of the State Board of Agriculture, beg leave to submit the following report:

We are pleased to report that since our last meeting, the following measures which we then recommended have been enacted into law, namely:

1. An Act to regulate the sale for agricultural purposes of crushed limestone, lime, etc.
2. An Act to amend an act, approved the twenty-fourth day of July, one thousand nine hundred thirteen, entitled "An Act defining commodities," etc.
3. An Act to regulate the sale of certain seeds, etc.

In addition to this, we are glad to announce that further measures, beneficial to the cause of agriculture, have also been enacted into law:

1. An Act establishing a State Commission of Agriculture; defining its powers and duties, etc.
2. An Act for the encouragement of agriculture and the holding of agricultural exhibitions, etc.
3. An Act to prevent deception in the sale of paint, putty, turpentine, or any substitute therefor, etc.
4. An Act amending an act, entitled, "An act, supplementary to 'An Act for the taxation of dogs and the protection of sheep,' approved the twenty-fifth day of May, Anno Domini one thousand eight hundred and ninety-three; requiring all dogs to wear a collar," etc.
5. An act for the protection of sheep, and the incidental destruction of certain dogs.

Your Committee would further recommend the following:

First: That the standard of purity of the following seeds, namely, medium red clover, mammoth red clover, crimson clover, alfalfa, timothy, be raised by legislative enactment from 97 per cent. pure, as the present law provides, to 99 per cent. pure.

Second: We recommend that the present law regulating and controlling the sale of fertilizers be so amended as to provide that the amount paid by the manufacturer to the State for the registration of the various brands will be on the tonnage basis instead of a fixed or fee basis per brand as the present law provides.

We also recommend that the above named Act be so amended as to provide that the manufacturer of commercial fertilizer containing nitrogen, shall stamp upon the bag or container of such commercial fertilizer whether the said nitrogen is obtained from mineral or organic matter.

We believe that a more stringent law should be enacted for the control of noxious weeds.

Respectfully submitted:
H. G. McGOWAN,
ROBERT W. LOHR,
S. S. BLYHOLDER,
P. S. FENSTERMACHER,
MATTHEW RODGERS,
Committee.

MR. LOHR: Now, along this line gentlemen, I want to make a few remarks. Of course you are aware of the fact that we will meet again before any legislation is enacted; that is, before any material legislation is enacted. When we meet here next year, if we meet, the Legislature will be in session so that we have time, up to that time, to receive suggestions and to find out what is really desired along the line of changed laws beneficial to agriculture. But I want to leave this one thought with you here, that it is not only necessary for you people to come up here and give your suggestions, it is not only necessary for us to come here and make these recommendations, but if we want a law, we must push the bill from the time it is introduced in the House and Senate until it has the signature of the Governor.

There is where we are a little lax in seeking legislation, we forget where the bill is, it is allowed to stay in Committee and is killed and we know nothing about it. If the manufacturers or railroads want a law passed through the Legislature, they follow it up and always know where it is and have someone looking after it. The agricultural people pass a resolution or assemble in a farmer's institute and then go home and forget all about it. The result is that the bill is introduced in the Legislature, lies around in Committee for two or three months, passes the House, goes over into the Senate Committee and lies there for two or three months and the Senate adjourns and you hear no more of your bill. So it is your business, if you expect a bill to pass the Legislature, to give it your active support from the time you first advocate it until it has the signature of the Governor—your active support, and by that I mean get in touch with your members of the Legislature from your county, get in touch with them and show them why you want it passed, show them that you are interested in the passage of that particular measure and in that way we can obtain legislation along these lines, but we have just been a little too negligent, there has not been enough push and probably the chief reason for all this has been the lack of organization among the farmers. (Applause).

MR. McGOWAN: I would like to second all that my friend Mr. Lohr has said relative to the assistance that this Legislative Committee should have and the co-operation of every member of the State Board of Agriculture along this line. I passed through two sessions of the Legislature, and Mr. Lohr speaks advisedly and knows how much every member appreciates the co-operation and assistance of his friends at home or anywhere throughout the State in his endeavors to press any bill so that it may reach the Governor and receive his signature and become a law. Mr. Lohr has said you are interested here, but when you get to your various homes, you forget about the Legislative Committee and you forget even your own interests. Now we all agree that we ought to have a more stringent law against noxious weeds. Mr. Herr, from Lancaster, referred to this yesterday. Our farms are becoming saturated with these weeds. I remember when I was a boy my father would send me a quarter of a mile to pull a carrot out of the field, so watchful was he. Where are we today? Our fields and by-ways are simply saturated like a flower bed with wild carrots and various other noxious weeds. In our county, as an illustration, there is the owner of two farms and upon these two farms weeds have multiplied until they are a general nuisance. In Penn township, of my county, the Farm Bureau took this matter up and by reference to the statute books found that it was powerless or they were powerless, this Committee, to do anything in the matter to obliterate this nuisance. Now then, we did have a bill before the last Legislature enumerating just such weeds as grew upon these two farms and we would have had plenty of redress had this bill become a law. It fell by the wayside just for want of proper support from the farmers of our State.

Further, we had a most excellent fertilizer bill and it just reached the point, where, if it just had a little push to push it over the high pinnacle, it would have been a splendid law, governing the tonnage tax upon fertilizers, which I believe is absolutely necessary, as well as containing other provisions beneficial to the farmers. That bill passed through the House all right, but when it reached the Senate, the big fertilizer manufacturers jumped on it. The consequence was they were in the majority and the farmers, as usual, were in the minority. Now I simply want to ask your co-operation, and when you see that there is any matter that is beneficial to the farmers of the Commonwealth, or their interests, get in touch with the Legislative Committee, or if not, with the members of the Legislature from the various sections of the State.

MR. J. ALDUS HERR: I would like to say a word with reference to what I mentioned yesterday. Would it be asking too much to have a law passed to eliminate certain obnoxious seed from grass seed? You heard the expression used yesterday, and we especially in Lancaster county, in a limestone soil are getting thoroughly polluted with Canada thistle. I recollect the time when there wasn't a Canada thistle stalk in the neighborhood for 20 or 25 years, and now I doubt if there are any farms that haven't a few of them. We get rid of them as soon as we find one, but as fast as we get rid of one, another takes its place. Why couldn't we have a law eliminating Canada thistle and some other obnoxious weeds entirely? Why must

we have it at all? For the life of me, I cannot see why. I would like to hear other views on that; it is a pretty serious question with us.

MR. GEORGE: I do not know whether I am in order or not on the subject before the house, but the discussion seems to have drifted on to the weed question. Yesterday, when that subject was up, I would liked to have said a word or two, but the time was short. You know the Government is very generous and has been for some years in sending out packages of seeds and different kinds of grain. Last year the Congressman from our district wrote me that he had several packages of alfalfa, Canadian alfalfa, and some soy beans, and wanted me to send him the names of persons to whom he could send those packages. I did so and used some of those soy beans myself. When they grew up I found a weed among those seeds that came from the Government. I don't know whether it was a bad weed or a good one. I took a sample of the blossom, of the leaf, and sent it to Prof. Menges. I never heard from him. He apologized to me yesterday when I met him and said that he was away from home when my samples reached him and he did not get there for some two weeks afterwards and the sample was so badly wilted then that he did not know and could not tell what it was. So even the Government are sending out weeds along with the seeds that they send out.

Another point I have in view, not only the grass seed but the grain seeds. Last year, last spring, about seeding time, our farmers were not quite satisfied with the oats that they had and they thought they would like to have a little better grade of oats to sow and there were two or three carloads of oats brought into that neighborhood and the farmers bought them very readily, and you never saw such a dose of soot as our farmers in Indiana county and the adjoining county, Armstrong, right around our neighorbood got this last year, but they did not yield much more than half a crop and it was almost impossible to thresh them, a man could not stay in the barn, they had o their blowers and threshers outside. These are a few of the things I wish to state, but as time is getting short, I will not take any longer.

The CHAIRMAN: Now, gentlemen, we have this report of the Legislative Committee before us; what is your wish in regard to it?

MR. HUTCHISON: I move its adoption.

The motion was seconded and carried.

MR. HILL: I have a resolution which I would like to present at this time. Yesterday, his Excellency, the Governor, while paying us a visit, referred to the tour that was made last season, especially for the purpose of seeing the State highways throughout Pennsylvania, and expressed an intention to repeat that tour this season, but specially for the purpose of seeing the growing crops and the condition of the farms, etc., in the State, and the Secretary of Agriculture expressed a desire that we might suggest a time for the trip and intimated that possibly it might require three weeks. I have made provision for four weeks in this, so as to give them some range of choice, and these dates are subject to change, if not acceptable.

Mr. Hill then presented the following resolution:

WHEREAS, His Excellency, Governor M. G. Brumbaugh, has expressed an intention to organize an automobile tour over Pennsylvania, and, whereas, the Secretary of Agriculture, the Hon. Charles E. Patton, desires to have this tour made of the highest possible value to agriculture in Pennsylvania, therefore be it

Resolved, That we suggest the tour to be made between August 15 and September 15, 1916, and that the party be and they are hereby invited and urged to visit as many Pennsylvania farms as possible in all sections of the State, and that the members of this Board cooperate with the Secretary of Agriculture in the making of arrangements for the party in the respective counties.

MR. HILL: I move the adoption of the resolution.

Motion seconded.

MR. HUTCHISON: I am in favor of this resolution; but is it not a little late in the year? The crops will all be gathered, that is, the wheat crop and hay; in September it will be all bare fields. Now, for the horticulturist, it is a fine time and is just in seeding time, just after seeding time in most of the states. Wouldn't it be better—

MR. HILL: As far as the view is concerned, it would be nicer in May, but then you wouldn't get the benefit of the fruit and corn in May.

MR. HUTCHISON: You would get the corn all right. I haven't thought enough on it to intelligently interpret it, but we are getting into the frost section, and cold.

SECRETARY PATTON: In our northern counties and our western mountainous counties, we will have frost; I think, from the 15th of August to the 15th of September would be a good time.

MR. HILL: I will change it from August 15 to September 15th.

A Member: I would suggest that if this party come to the Adams County Fruit Belt, they came from the 15th of September to the first of October. After October, the fruit is being gathered. The 15th of September to the first of October will be the best time to see the Adams county fruit, if we have any.

The CHAIRMAN: We have this resolution before us. What is your wish? It has been moved and seconded that this resolution be adopted.

MR. DE WITT: What is the date now?

The CHAIRMAN: August 15th to September 15th.

MR. De WITT: There has been nothing in this institute that interested me so much as this trip that I hope the Governor and his staff will make; but the western end of the State, up through Tioga county and up there will be very much nicer sometime between August 15, and September 1st; I have lived there 60 years; but come.

SECRETARY PATTON: We can arrange that by going into those districts early and taking the southeastern part of the State and down through the southern part of the State later, and fix that up that way.

MR. DE WITT: That's good; we want you to come.

The resolution was then adopted.

The CHAIRMAN: Is the Memorial Committee ready to report? Mr. Rodgers then presented the following report:

REPORT OF MEMORIAL COMMITTEE

Your Committee on Memorials beg leave to report as follows:

M. M. NAGINEY

Sadness fell upon the members of this State Board of Agriculture when the news came to us of the death of our friend and member of this Board, Morris Mitchell Naginey, whose death occurred in the German Hospital, Philadelphia, Pa., on March 25, 1915, where he had been confined for five weeks having undergone an operation. The operation was pronounced successful, but blood poison developed, causing death.

The deceased was born near his Milroy home sixty-two years ago. A few weeks before his death he had received the appointment of Postmaster at Milroy, Pa. For many years he was a member of this Board and was a member of the Executive Committee at the time of his death. He was the Chairman and Manager of the Farmers' Institutes that made them a success in Mifflin county. He was President of the Horticultural and Agricultural Association of his county and identified with other movements for the promotion of farming interests in his section. He is survived by his wife and four daughters.

This is but a brief tribute to our brother and friend. We have known him for so many years as a member of this Board. He was a man of strength intellectually, yet he rather shrank from public position than sought it. He enjoyed being a member of this Board. The most outstanding thing about him to us was his faith in God. "Blessed is the man whose strength is in Thee, and whose heart is in the highways of Zion." He estimated things in their relation to God's will and tried to live as in His presence.

We, the Committee and Members of this Board, extend to the family our heartfelt sympathy, and ask that the report be spread upon the minutes and a copy be sent to the family.

HON. HENRY C. SNAVELY.

It is with deep sorrow and profound regret that we have lately learned that God in his wise providence did by death call our brother and co-laborer, the Hon. Henry C. Snavely, member of the State Board of Agriculture, he representing the county of Lebanon for the last twenty years on this Board, to his eternal home, his death having occured November 21, 1915; aged seventy-one years and seven days.

Mr. Snavely was a descendant of Casper Snavely who came to America from Switzerland in the year 1735 and settled in Eastern

Pennsylvania. The Snavelys bought a very large tract of land near what is now the city of Lebanon. Our honored friend owned a farm on part of said tract where he lived and died.

Mr. Snavely was educated at his home school, Annville Academy and Eastman Business College, Poughkeepsie, N. Y.; taught school for three years and then settled down to farming and fruit growing. In this calling he made an entire success and became the greatest fruit grower in Lebanon county. He was influential in organizing the first subordinate Grange in the county, of which he was a life-long member. He was a member, both of the State and National Farmers' Alliance, President of the former and Vice-President of the latter; a member of the State Horticultural Society, of which he was President three years and for many years Chairman of its Fruit Committee. He represented his county in the Legislature at Harrisburg in the years of 1911 and 1913, with marked ability, giving special attention to the agricultural interest of the State and to the welfare of the tillers of the soil.

In the twenty years of Mr. Snavely's service with the State Board of Agriculture, he has filled about all the different offices on said Board. While he was not a man known for his much speaking, yet he was one of the best of all-round men we ever knew—sweet spirited, strong in character, wise in council and highly intelligent. He will be sorely missed on this State Board of Agriculture. While we mourn his death, let us bow with humble submission to the will of Him who makes no errors but "doeth all things well." "Mark thou the perfect man, behold the man of upright ways; Because the man of holy life, in peace shall end his days."

Resolved, That this report he spread upon the minutes and a copy sent to the family of the deceased.

PROF. SAMUEL B. HEIGES

Prof. Heiges, in the early days of the Board of Agriculture and of the Farmers' Institute work, was one of the prominent and forceful educators of the times, having travelled over almost the entire State and in several other states, in institute work. He was an educated and cultured scientist full of practical thought and information—always ready to work in any direction which his varied attainments invited. During President Cleveland's administration he was made Pomologist of the National Department of Agriculture—of recent years his services were largely employed in Virginia agriculture. He recently expired in his York home and was respected and honored by all who knew him.

THOMAS J. EDGE.

The announcement of the death of Hon. Thos. J. Edge which came to most of the members of this Board through the public press, was a surprise to the many men of the State who for years were co-laborers with him for the advancement of the agricultural interests of our beloved Commonwealth. Although he had passed the "three score and ten" years allotted to men and was known to be suffering some of the infirmities common to men of advanced age, his calling from labor to reward was so sudden as to be almost incredible; and even now after the lapse of six months it is hard to realize that he

has stepped from the stage of activity and forever passed from the busy scenes of the useful life, in which he was so helpful to the generation to which he belonged.

Mr. Edge was born at Midway, Chester county, Pennsylvania, August 13, 1838. He was educated in the private schools maintained by the Society of Friends, to which Communion his family belonged, the Westtown Boarding School and the Select School maintained in Philadelphia by the same Communion. Before reaching the period of mature manhood, he moved with his father's family to a farm in New Garden township, Chester county, Pennsylvania, where his natural love for agriculture and agricultural pursuits was so developed as to turn his attention to the farm industry as his life work and led to his final ownership of the same farm. Here he remained an active and successful farmer until, in February, 1877, he was called by a unanimous vote of the State Board of Agriculture to the position of its first Secretary, in which place he was continued by re-election until, in 1895, he was appointed by the late Governor Daniel Hastings the first Secretary of Agriculture of the State.

During his period of service as Secretary of Agriculture he continued to hold the office of Secretary of this Board, as provided in the Act creating the Department, making his term of service as Secretary of this Board twenty-two successive years.

When appointed Secretary of Agriculture, his first duty was the organization of the new Department which important work was so well accomplished as to secure the approval of the Chief Executive and meet the favor of the friends of agriculture throughout the State.

It is impossible for your Committee, in the brief space that can be allotted to this report, to direct attention to all the good that has come to the people of our beloved State from the continued activity of our departed co-laborer and friend. Among the many, we can not, even though space is limited, overlook a few of the helpful things he promoted and aided in accomplishing while officially connected with the agricultural interests of the State.

During the first year of his service as Secretary of this Board, he turned his thought to the importance of conserving the forests of the State, not only on account of their value to agriculture through the influence they have upon climatic conditions, but on account of the commercial and economic value of the timber producing interests to the State and nation. The interest he showed in this matter was continued, and as a means of extending it throughout the State, he secured the attendance, at meetings of the Board, of persons who, in papers read and addresses delivered, were able, as experts, to show the great importance of taking proper care of forest lands still existing, and replanting such as were already devestated. This was earnestly and consistently kept up, until a Forestry Commission was created by an Act passed by the General Assembly during the session of 1883, the usefulness of which has been extended by the subsequent establishment of a Department of Forestry.

Among the many important interests that received Mr. Edge's attention and were thereby promoted, in the earlier years of his service as Secretary of the Board were, the Act to regulate the manufacture and sale of Commercial Fertilizers, so as to insure to farmers a fair return for the money expended for the same, which he prepared and submitted to the Board for its approval in 1877, and which became a law in 1879; the Oleomargarine legislation, the

first bill of which he at an early date in the period of his service laid before the Board for approval and which was the forerunner of all the legislation since passed, so important to the dairy interests of the Commonwealth; and the Act of June 2, 1887, establishing Farmers' Institutes and making appropriations for same. Added to his work in securing the passage of the last Act named, was the important service to the State, of so completely organizing this work as to start it on a continued mission of usefulness that can not be over-estimated.

But the grim reaper Death is no respector of person. This man of honor, integrity and usefulness has gone from among us and it is indeed a sorrowful task for your Committee to give expression to their feelings and the feelings of this body upon the death of one with whom we were so long associated as members of this Board, and the quotation, "that death loves a shining mark," was more than ever impressed upon us when we heard of his death. His remarkable intelligence, uniform kindness and unabated labor for the building up of all agricultural interests in the great State of Pennsylvania will always be held as precious memories. He was widely known throughout the State as a man of extensive knowledge, quick perception, affable, courteous and possessed of a high sense of honor and executive ability, all of which united to make him a highly capable official.

He was a man devoted to duty, and in every sense a Christian, a man blameless among his fellows, and in short, one of nature's noblemen. He was an ideal citizen and those who knew him best loved him most. The family is bereaved of a devoted husband and father, and the members of this Board have lost a friend in whom faith and interest were unbounded.

Therefore, resolved, That we the State Board of Agriculture of Pennsylvania, with a deep sense of the loss we ourselves sustain, tender to the bereaved family our heartfelt sympathy in their severe trial, and recommend that this report be spread upon the minutes of the Board and a copy sent to the family of the deceased.

MATTHEW RODGERS,
JOEL A. HERR,
S. S. BLYHOLDER.
Committee.

(Revised by resolution at Reading meeting).

HENRY W. NORTHUP.

Henry W. Northup died July 30, 1915, at his home in Glenburn, Pa., after twenty minutes illness, aged seventy-nine years.

Therefore be it resolved by the State Board of Agriculture of Pennsylvania, of which our lamented friend was a member for many years, that while we bow with humble submission to the will of the Supreme Being, we do not the less mourn for our neighbor and member who has been called from his work to his final rest.

Resolved, That in the death of Henry W. Northup, this Association loses a member who was always active and zealous in his work; prompt to advance the interests of our Association, devoted to its welfare, one who was wise in council, an honest and upright man, whose virtues endeared him to all his fellow-citizens.

Resolved, That the members of this Association tender their heartfelt sympathy to the family and relatives of our deceased member in this their sad affliction.

MATTHEW RODGERS.
JOEL A. HERR,
S. S. BLYHOLDER.
Committee.

The CHAIRMAN: Gentlemen, you have this report of the Memorial Committee; what is your wish?

MR. BRAUN: I move its adoption as a whole.

Motion seconded.

MR. JOEL A. HERR: May I ask that an opportunity be afforded for remarks before we vote on the question, on the deaths of the different parties?

The CHAIRMAN: Mr. Herr.

MR. JOEL A. HERR: I think I would be remiss in my duty if I did not have anything to say concerning the death of my old friend, Thomas J. Edge. I regard Thomas J. Edge as one of the greatest workers and educators along agricultural lines that we have ever had in the State, a man whose word was as good as his note, a man whose word was not disputed, whose authority was recognized, and indefatigable worker who accomplished a great deal of work in a short time; modest in his pretentions, devoted to his work closely, right down as long as he was officially connected with the Board or with the Department. In his declining years he was unfortunate enough to be blind, his faithful wife having to take care of him for years. In the death of Secretary Edge we have lost an example of fidelity to our cause. We have his example before us, I think, unequalled by any other member of the Board, I think the records of the Board will show that he has done more work and there was more published under his signature, by his authority than any other officer of the Board, and I was very sorry that in his declining years, having dropped out of the work and being unable to be present at any of our meetings, that he was neglected more than he should have been. We should have visited him more. I visited him about a year ago, and while he was cheerful, yet there was a sadness about his affliction that I was sorry for. Now I might speak of the other members who have died. They have all been active, good members. I was very well acquainted with them all. I traveled over this state a good long time with Prof. Heiges and he was always an acceptable lecturer in the State of Pennsylvania. I think the example he set before us are worthy of emulation, and while we are sorry for his death, we will emulate his good works.

MR. SEAMANS: I would like to speak a word for my friend and neighbor, Henry W. Northup. Henry W. Northup was a speaker for the State Board of Agriculture for some 16 years. He attended our meetings; he was a good, conscientious man; we always heard his voice at our meetings. He was a wonderful Sunday-school worker. I attended the funeral, and 20 little girls and boys from

four years of age up to perhaps ten, carried flowers and laid them on his casket. He was a man who was successful in life financially. He believed in doing all things well. Peace to his ashes.

The CHAIRMAN: Are there any other remarks? We will kindly have a rising vote on this.

The report was then adopted by a rising vote.

The CHAIRMAN: Is there any other business to come before the Board?

MR. J. ALDUS HERR: After adjournment, I wish the Committee that was appointed at the forenoon session would remain in the room. The Committee are Mr. Weld, Mr. Fenstermacher, Mr. Frank Ranck and Mr. Studholme.

The CHAIRMAN: The members of that Committee heard Mr. Herrs request. Is there any other business?

MR. JOHN SHOENER: We have had with us at these meetings a very distinguished gentleman, who, for a number of years, has been at the head of the leading organization of farmers of Pennsylvania, and I believe we will all be glad to hear from him. I refer to Past Master W. F. Hill, of the Pennsylvania State Grange.

MR. HILL: That is very kind, I am sure, and I appreciate it very much. Thank you, Mr. Chairman and friends, but the hour is late, the weather is warm, conditions are unfavorable and I think the best thing I can do is to sit down and say that in the future I hope to meet with you annually. (Applause).

The CHAIRMAN: Is there any other business? If not, a motion to adjourn will be in order.

On motion the Board then adjourned.

CHARLES E. PATTON,

Secretary.